

DTSC Site Mitigation Presentation
DTSC Independent Review Panel Meeting – Part II
CalEPA Building, Sacramento
February 8, 2017

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Brownfields and Environmental Restoration Program



Department of
Toxic Substances
Control



CalEPA
California Environmental
Protection Agency

Agenda

1. DTSC Coordination
 - Air Monitoring
 - Radiological Contamination
2. Site Mitigation Decision-Making Process
3. Five-Year Review Process
4. Communications
5. Site Mitigation Funding
 - National Priorities List and State Orphan Sites
 - Program Funding and Expenditures
6. Program Improvements – Implemented and Underway
7. Polychlorinated Biphenyls (PCB) Sample Analysis
8. Exide Update

DTSC/Site Mitigation Program Coordination

Federal Agencies

- United States Environmental Protection Agency (EPA)
- Others (Department of Defense, Fish and Wildlife)
- Tribal Outreach and Consultation

State Agencies

California Environmental Protection Agency

- California State Water Resources Control Board and Regional Water Quality Control Boards
- California Air Resources Board
- California Office of Environmental Health Hazard Assessment

California Department of Public Health

California Fish and Wildlife

Local Agencies

- Water Districts
- Air Quality Management and Air Pollution Control Districts
- County Agencies (e.g., Public Health and Certified Unified Program Agencies)
- School Districts



Federal Agency Coordination

United States Environmental Protection Agency (EPA)

- National Priorities List (Superfund) Site Cleanups
- Corrective Action (Resource Conservation and Recovery Act Facilities)
- Grants

Others

- Military/U.S. Dept. of Defense Site Cleanups
- U.S. Dept. of Energy Site Cleanups



Tribal Outreach and Consultation

Executive Liaison

- Executive Tribal Liaison established with the new Office of Environmental Justice (EJ) & Tribal Affairs
- Signals Department commitment to meaningful and respectful consultation across projects
- Current and new projects are transitioning to include tribal outreach and consultation requests in coordination with the Executive Tribal Liaison

Tribal Outreach and Consultation Mandates

- Executive Order B-10-11 requires state agencies to encourage and permit representatives of Tribal governments to provide meaningful input into the development of legislation, regulations, rules, and policies on matters that may affect Tribal communities
- Assembly Bill (AB) 52 (Public Resources Code Section 21080.3.1 – 21080.3.) requires lead agencies to consult with California Native American Tribes before conducting an environmental review of agency activities to ensure Tribal communities who may be impacted are informed and actively involved in mitigating any potential impacts

Tribal Outreach and Consultation Building Relationships

- Tribal consultation activities, which rely on building and maintaining trusted relationships, have previously been limited and lacked effective coordination within DTSC
- DTSC is consulting with Tribes in developing a Department Tribal Consultation Policy, scheduled to be finalized in early 2018

State and Local Agency Coordination

California State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) & Water Districts

- DTSC Lead or Regional Water Quality Control Board Lead Projects

California Air Resources Board (ARB)/Local Air Districts

- Air dispersion modeling/Permitting
- Ambient monitoring
- Health Risk Assessments (Air Toxics Hot Spots)

California and County Departments of Public Health (CDPH)

- Radiological contaminants
- Public Health Impacts for Toxics
- Certified Unified Program Agencies



Use of Health Protective Practices In Site Mitigation

During site remediation:

- Goal is containment of hazardous substances
- Focus on mitigation measures
- Effective source control onsite
- Perimeter air monitoring for confirmation

Regulatory Oversight Components

- Follow local Air District rules
- Develop site and chemical specific risk-based action levels
- Mitigation Measures/Air Monitoring
- Field oversight

Local Air District Rules

- Fugitive Dust Emissions
- Volatile Organic Compound Emissions
- Soil Excavation, Stockpiling, and Transportation

(e.g., South Coast Air Quality Management District Rules 403 and 1166)

Action Levels/Monitoring

- On-Site
Worker Health
and Safety
- Off-Site
Resident
Protection
- Perimeter Air
Monitoring



Field Oversight

Watering for Dust Control



Soil Sampling



Overview – DTSC Role

Disposal of Radiological Contamination

Presented by Ray Leclerc – Division Chief

Regulatory Authority:

- **Soil and Groundwater**

- Potential radiological-impacted soil and groundwater evaluated under Remedial Investigation Process by DTSC, with California Department of Public Health (Radiological Branch) and, in some cases, EPA assistance

- **Buildings and Debris**

- DTSC has no direct statutory authority
- U.S. Nuclear Regulatory Commission and California Department of Public Health (Radiological Branch) provide licensing and decommissioning approvals
- U.S. Department of Energy has decision authority on Department of Energy closures



Disposal Options

- Material classified as Low-Level Radioactive Waste, must be disposed at Low-Level Radioactive Waste-licensed facility
- Decommissioned buildings cleared by the U.S. Nuclear Regulatory Commission and California Department of Public Health for unrestricted use may legally be disposed or recycled without restrictions
- U.S. Nuclear Regulatory Commission and California Department of Public Health – unrestricted use if the residual radioactivity that is distinguishable from background radiation does not exceed 25 mrem/yr
- Governor's 2002 moratorium prohibits municipal landfill disposal (<https://www.cdph.ca.gov/certlic/radquip/Documents/RHB-HT-EO-D-62-02.htm>)
- Buildings and structures with no prior radiological use have no legal disposal restrictions

Debris Surveys and Disposal Decisions

- Buildings and structures surveyed by Responsible Party contractors prior to demolition
- Surveys consist of surface scans and wipe samples analyzed in conformance with existing laws, regulations, guidance and established standards
- Debris with confirmed or suspected elevated radiological activity sent to Low-Level Radioactive Waste landfills
- Non-impacted debris associated with radiological operations may be sent to Class I landfills, if it meets landfill disposal criteria
- Recycling of non-impacted debris (concrete and steel) allowable under law

Site Mitigation Decision-Making Process

Presented by Dot Lofstrom – Division Chief

- Initial Discovery
- Site Assessment
- Selecting Remedies
 - Identifying Options
 - Selection Process
- Overseeing Remedial and Removal Actions
 - Implementation
 - Long-Term Remedies
- End of Projects

Cleanup Process Steps

Process Step	Corrective Action Facilities (California Health & Safety Code Division 20 Chapter 6.5)	State Superfund Sites (California Health & Safety Code Division 20 Ch. 6.8)
EVALUATION	Resource Conservation and Recovery Act Facility Assessment	Preliminary Endangerment Assessment
	Resource Conservation and Recovery Act Facility Investigation	Remedial Investigation
REMEDY SELECTION	Corrective Measures Study	Feasibility Study
	Remedy Selection/Statement of Basis	Remedial Action Plan
IMPLEMENTATION	Corrective Measures Implementation	Remedial Action Implementation
	Operations & Maintenance	Operations & Maintenance

Site Discovery

Sites discovered by:

- Emergency responses
- Agency referrals
- Voluntary cleanups
- EPA Preliminary Assessment/Site Investigation Grant
- Orphan Program
- Citizen complaints

Initial Site Assessment

- Verify hazardous substance releases and existence of threat
 - Sample soil, soil vapor, groundwater, surface water
 - Preliminary assessment of risks
- Sites with > 1 in million cancer risk or > 1.0 hazard index require further assessment
- Identify potential responsible parties and order cleanup

Site Characterization

- Conceptual Site Model – framework for investigation
- Define nature and extent of contamination
 - Soil
 - Soil gas
 - Groundwater
 - Surface water
- Risk assessment to quantify health risk

Selection – Identifying Remedial Options

- Feasibility study to identify remedial (cleanup) options
- Based on:
 - The Nine Criteria in the National Oil and Hazardous Substances Pollution Contingency Plan
 - Health & Safety Code Division 20 Chapter 6.8 Section 25356.1 for state superfund sites

National Contingency Plan

Nine Criteria

Threshold Criteria

1. Overall protection of human health and the environment
2. Compliance with applicable or relevant and appropriate requirements

Primary Balancing Criteria

3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility or volume
5. Short-term effectiveness
6. Implementability
7. Cost

Modifying Criteria

8. State acceptance
9. Community acceptance



California Health & Safety Code

Section 25356.1 (Six Criteria)

- Site health and safety risks
- Effect of contamination on resources
- Effect on groundwater and availability of treatment
- Site contamination and ability to move off-site
- Cost effectiveness of measures considered
- Environmental impacts of land disposal versus treatment options

Remedy Selection

- **State Superfund Sites**
 - Remedial Action Plans (interim and final remedies)
 - Removal Action Workplans (removals < \$2 million)
- **Hazardous Waste Facility Corrective Action**
 - Corrective measures proposal and selection
- **Decision documents subject to:**
 - Public review and comment
 - California Environmental Quality Act analysis

Remedy Selection (continued)

- **Cleanup Goals based on:**
 - Background
 - Acceptable Health Risk : National Contingency Plan defines:
 - 1 in 10,000 to 1 in a million excess cancer risk
 - Hazard Index: generally <1.0 non-cancer risk
- **Selection based on:**
 - Ability to satisfy Nine Criteria and California Health and Safety Code Division 20 Chapter 6.8 Criteria
 - Ability to meet cleanup goals

Remedy Implementation

- **Review and approval of:**
 - Remedy design plans
 - Monitoring plans
- **Must obtain State and local agency permits, if required**
- **Field oversight to ensure:**
 - Meets design workplans, applicable regulations
 - Work conducted in safe, protective manner
- **Confirmation sampling to verify cleanup levels attained**

Sites with Long-Term Remedies

- **Operations and Maintenance Agreement**
 - Description of operations, monitoring, shut down
 - Financial assurance
 - Inspections and Five-Year Reviews
- **Land use restrictions**
 - Enforced via land use covenant with site owner

End of Project

- **Unrestricted Land Use**
 - Meets all cleanup levels and remedy goals
- **Restricted Land Use**
 - Long term remedies operating properly and successfully
 - Land use covenant with property owner
 - Operations and Maintenance Plans and financial assurance in place, if required
 - DTSC monitors for duration of remedy or restrictions

Five-Year Review Process

Presented by Ray Leclerc, Division Chief

- DTSC reviews remedies approximately every five years where hazardous substances is left in place
 - Exclusions
- Consistent with the Federal National Contingency Plan
- Include estimate of future costs and associated financial assurance

Five-Year Review Process

Evaluate:

- Is the remedy still protective, and is it operating as intended?
- Are the cleanup levels and remedial objectives still current/valid?
- Is there any new information that would affect the protectiveness of the original remedy?
- Is financial assurance adequate going forward?

Five-Year Review Process - Components

- Technical review
- Financial assurance review
- Community Involvement
- Conclusions/actions
 - Determine that remedy still protective
 - Determine that financial assurance still adequate
 - If not, change remedy/update financial assurance

DTSC Communications

Presented by Dot Lofstrom – Division Chief

- **Each site has:**
 - Project manager who manages DTSC oversight functions
- **Includes additional support staff, as appropriate**
 - Toxicologist, Geologist, Engineer, Attorney, Public Participation Specialist
- **Project Manager Activities Supervised by:**
 - Unit Supervisor
 - Branch Chief
 - Division Chief

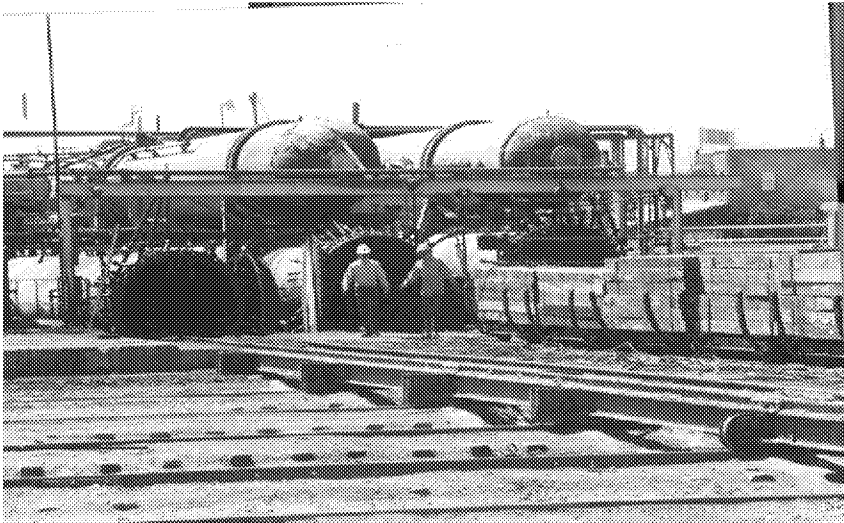
Communicating Progress to the Public

- **Community Involvement Plan**
 - Defines affected community and their concerns
 - Informs elected officials and city councils
 - Plan for communicating progress
- **Fact sheets mailed out to inform community, as needed**
 - Milestone completions
 - Project timelines
 - Public meeting announcements

Site Mitigation Funding - Orphan Sites

**Presented by Charlie Ridenour –
Chief, Sacramento Cleanup Branch**

- Fund-Lead National Priority List (NPL) Sites (Superfund)
- State Orphan Site



Selma Treating Company – National Priorities List Site



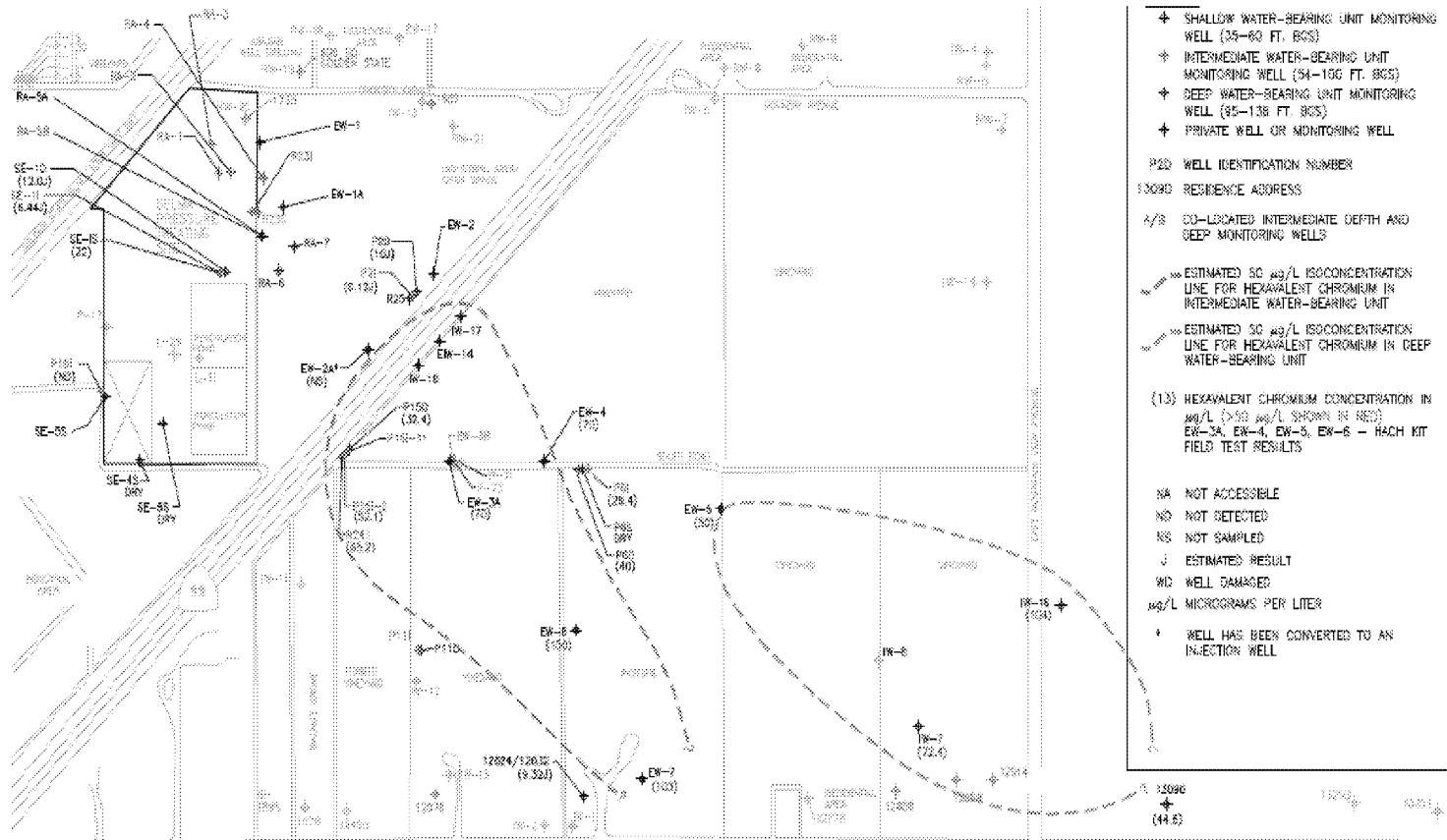
Selma Treating Company - Excavation



Selma Treating Company



Hexavalent Chromium in the Groundwater One Mile Away

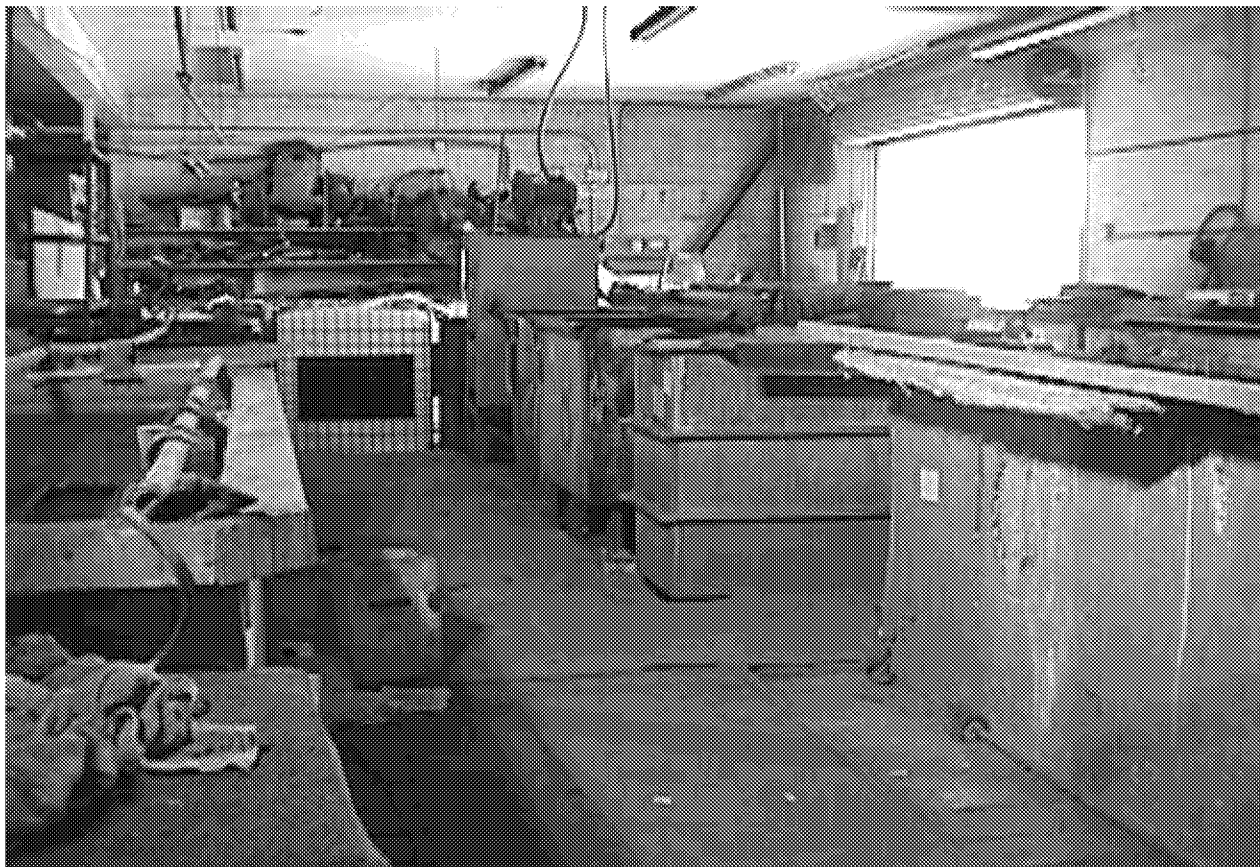


Klau/Buena Vista Mercury Mine

- NPL Site
- Orphan
- Mine Drainage



Orphan Site – Plating Shop



Orphan Site – Plating Shop



Orphan Site - Wood Treatment Facility

Chromic Acid Contaminated Concrete



Abandoned Mine Waste

- Acid Soil
- Arsenic
- Between Residential and High School



Fund-Lead National Priorities List and State Orphan Background

- Laws require responsible party to cleanup
- No responsible party
- Imminent threat - response needed now
- Responsible party fails to comply with a cleanup order
- California Health and Safety Code – revised to establish the Site Remediation Account

Site Remediation Account

- Funding is appropriated annually from Toxic Substances Control Account
- Only available for “Direct Site Remediation Costs”
- Not for state staffing
- Historically - “Fixed Formula”
- ~\$10 million per year
- Need in Fiscal Year 2016/17 => \$23 million

Site Remediation Account (continued)

- Appropriation can be used for four years
- Funding allocated by priority
- Documented in expenditure plan
- Fund approximately 50 activities each year

Site Remediation Account (continued)

Account funds allowed to be used for:

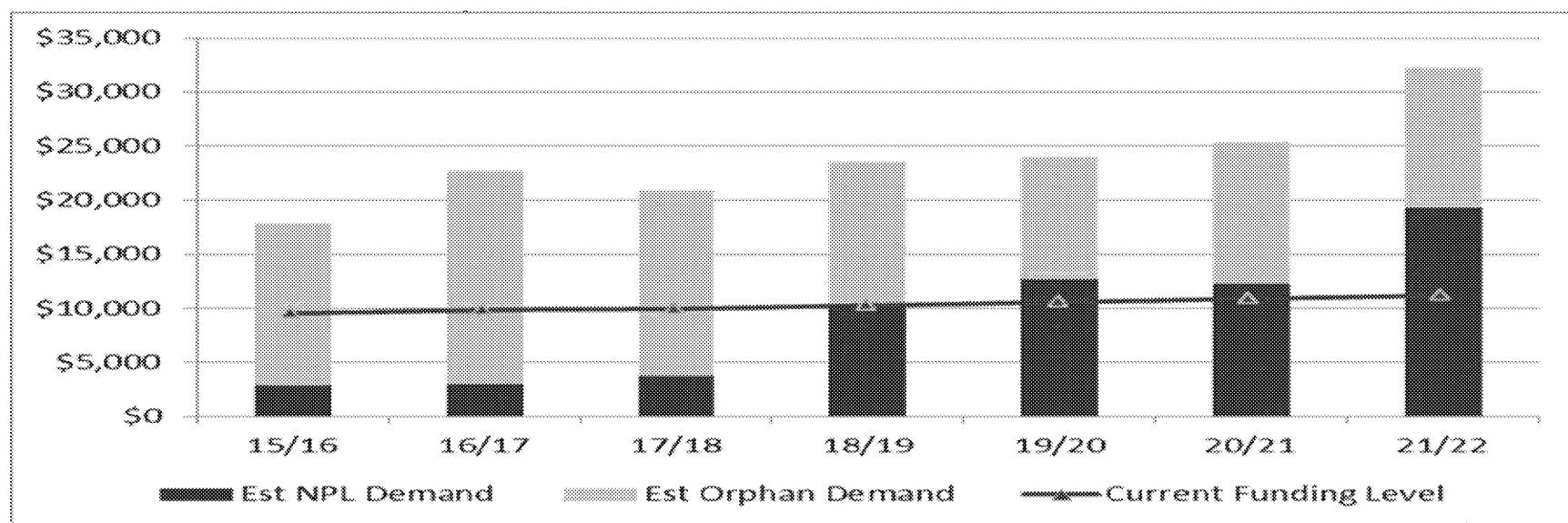
- Pay state share at Fund-Lead National Priorities List sites
- Discover sites/Find responsible parties
- Removal or Remedial Action:
 - When there is imminent or substantial endangerment
 - Where there is no responsible party
 - Where responsible party fails to comply with enforcement order

Site Remediation Account (continued)

- 107 projects
- 22 listed on National Priorities List – “Fund-Lead National Priorities List”
- Remainder are “State Orphan”
- Wood treatment facilities, chemical formulators, landfills, mines, dry cleaners, plating shops, radiator shops, etcetera
- Bankrupt, company dissolved, abandoned, or “Mom and Pop” operation

NPL/Orphan Demands

Federal Superfund Demands Compete with State Cleanups*



*Excludes legacy landfills.

Assembly Bill 2891

– Site Remediation Account

- Changed funding process starting Fiscal Year 2017
- Report to Legislature
- Direct site remediation costs
 - Fund-Lead National Priorities List obligations
 - State Orphan sites
 - Three-Year Cost Estimate

Sources of Site Mitigation Program Funding

Presented by Jennifer Black –
Chief, Grants and Program Support Branch

Major Funding Sources (>75% of Cleanup Expenditures)

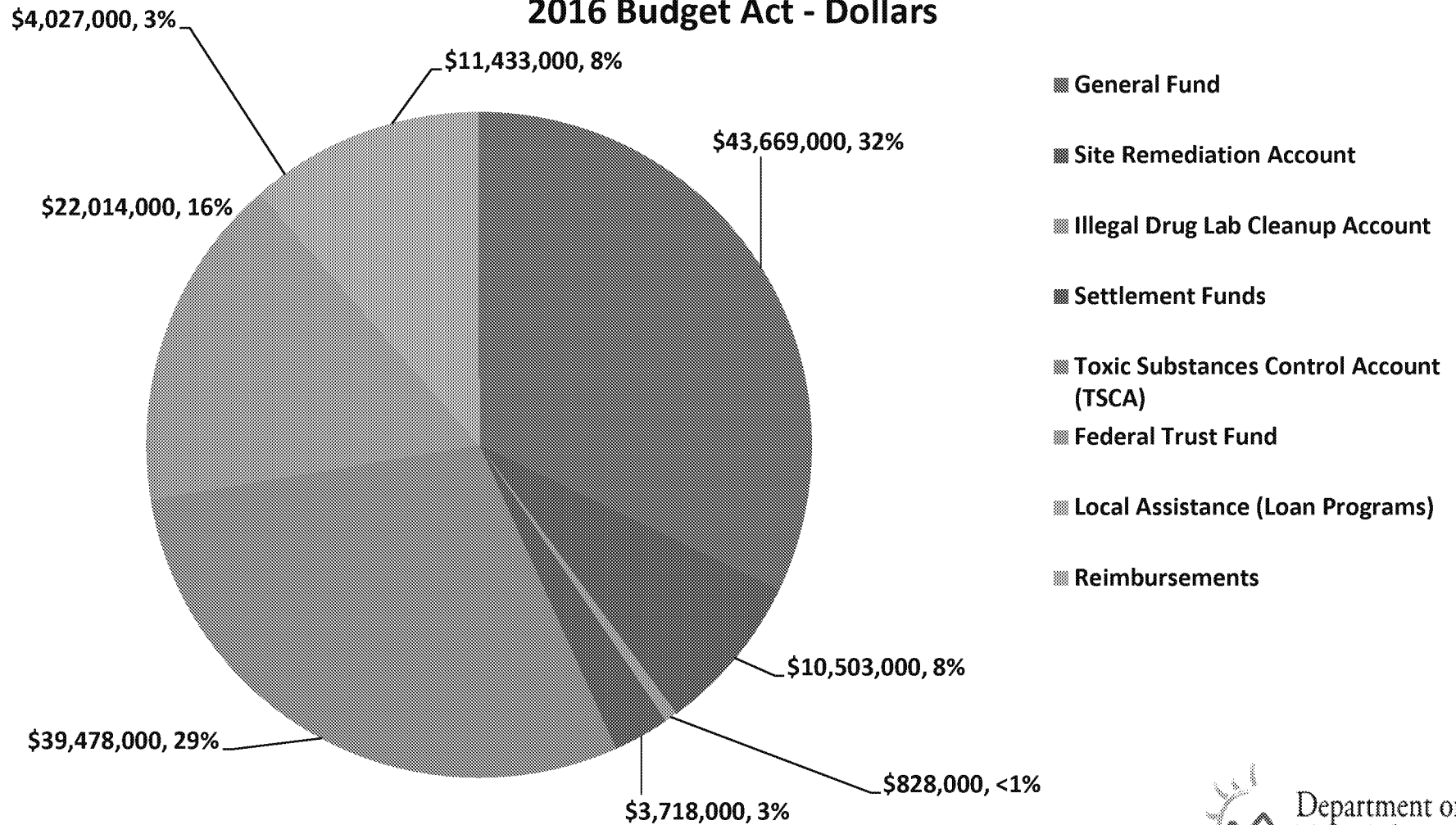
- General Fund
- Toxic Substances Control Account
- Federal Trust Fund

Other Funding Sources

- Reimbursements
- Site Remediation Account
- Local Assistance (Federal and State Funding)
- Settlement Funds
- Illegal Drug Lab Cleanup Account

Cleanup Program Funding Split

Budgeted Expenditures Fiscal Year 2016/17
2016 Budget Act - Dollars



SITE MITIGATION PROGRAM IMPROVEMENTS

- **Process Improvements**
 - Enhanced Remedy Selection
 - Spatial Prioritization Geographic Information Tool
- **Other Improvements Underway**
 - Voluntary Cleanups
 - Toxicity Criteria Rulemaking

Site Mitigation Program Improvements Enhanced Remedy Selection (Corrective Action)

Presented by Ajit Vaidya, Unit Chief,
Engineering and Special Projects Office

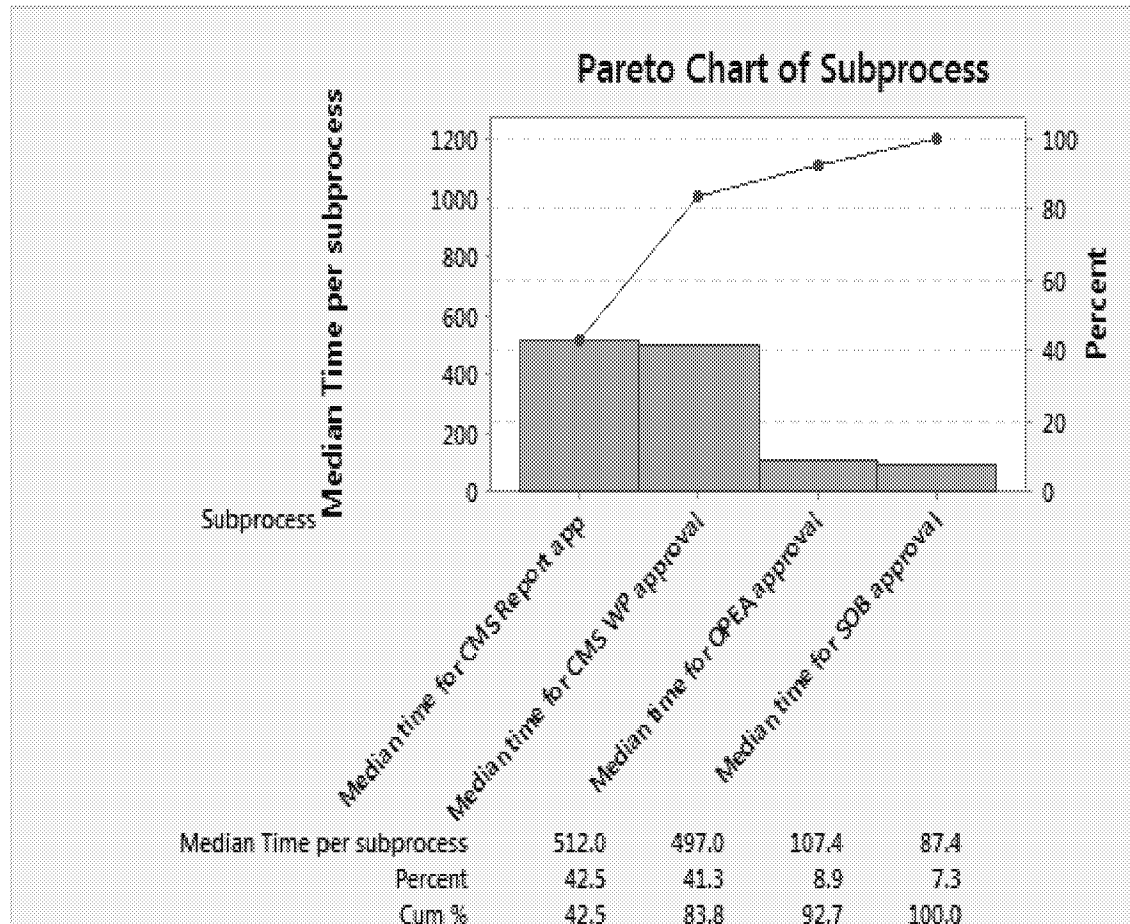
- **Goal:** Reduce time for remedy selection process at Resource Conservation and Recovery Act corrective action sites, while:
 - Protecting human health and the environment
 - Ensuring cleanup goals are met
 - Maintaining public participation and California Environmental Quality Act compliance
- **Two concurrent DTSC initiatives in 2016:**
 - Remedy Selection Process Improvement Project
 - Univar Remedy Selection Streamlining Pilot



Remedy Selection Process Improvement

- **Project features:**
 - Lean Principles: Eliminate Waste/Data Driven
 - Evaluate EnviroStor data for DTSC's existing process
 - Identify root causes of delay for remedy selection
 - Develop ways to streamline remedy selection process
- **Proposed process improvements:**
 - Agree on conceptual site model and cleanup goals upfront
 - Eliminate duplicative work/re-work
 - Front-end coordination
 - Elevate decisions quickly

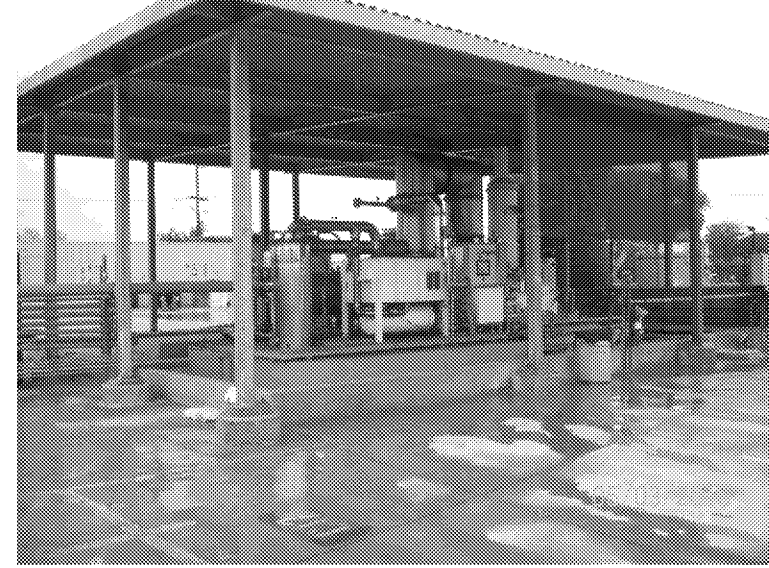
Identifying Process Steps With Long Completion Times



Breakdown of Process Times:

- ❖ Corrective Measures Study: 84%
- ❖ California Environmental Quality Act: 9%
- ❖ Decision Document: 7%

Remedy Selection Streamlining Pilot Project: Univar Success Story

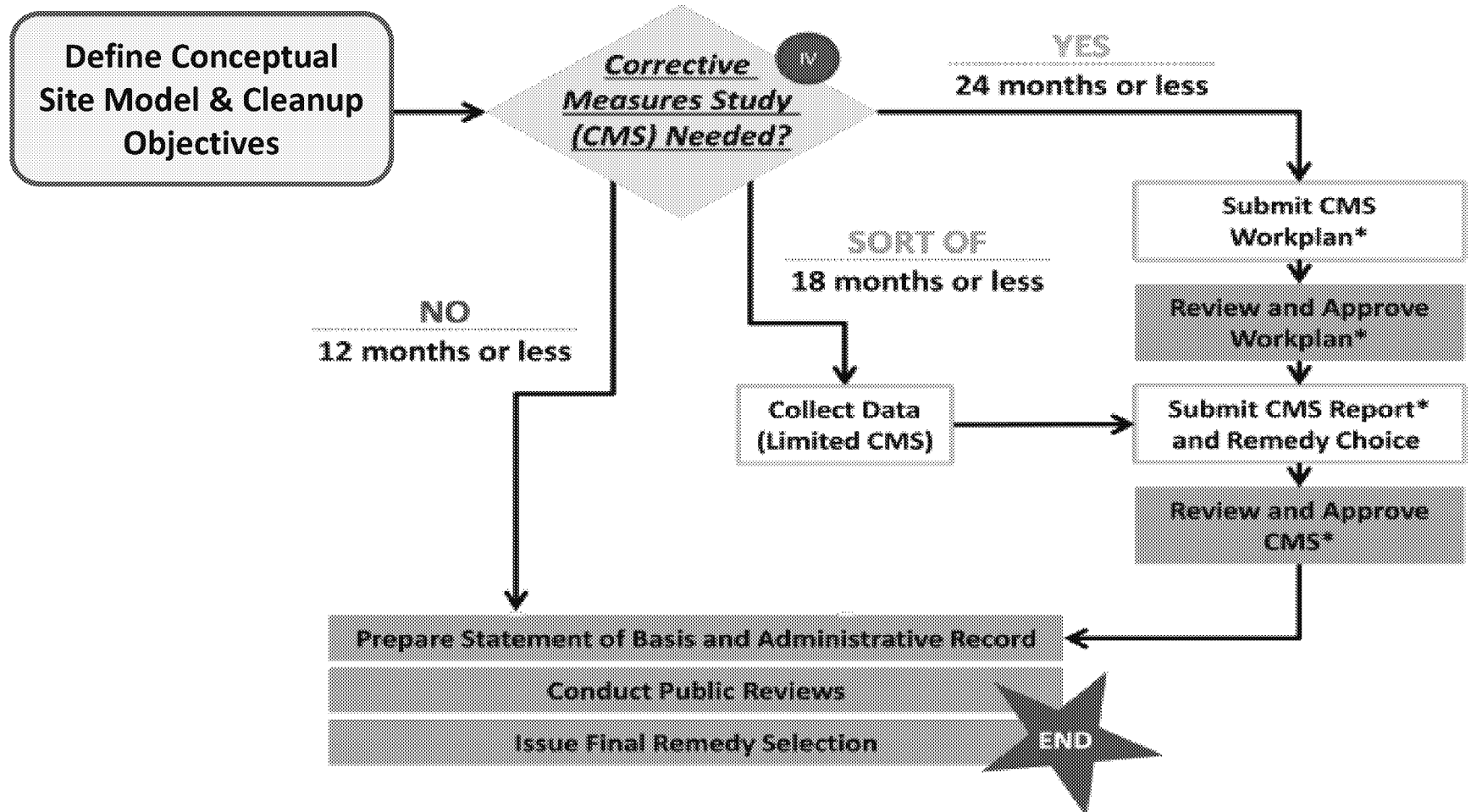


- **Pilot Project at Univar site in Commerce**
 - Stalled groundwater cleanup site
 - Applied United States Environmental Protection Agency's Resource Conservation and Recovery Act streamlining concepts (RCRA FIRST)
 - Remedy Selection kick-off meeting held in February 2016
 - Breakthrough moment
 - Reached decisions on critical issues
- **Streamlined Corrective Measures Study**
 - Resource Conservation and Recovery Act allows flexibility
 - One-size fits all approach not appropriate
- 58- May consider single or few remedial alternatives



Remedy Selection

Corrective Measures Study Process



Remedy Selection Streamlining Pilot: Univar Success Story - RESULT



- Final remedy selected in nine months (December 2016)
- Off-site groundwater cleanup to begin in 2018, two years ahead of schedule

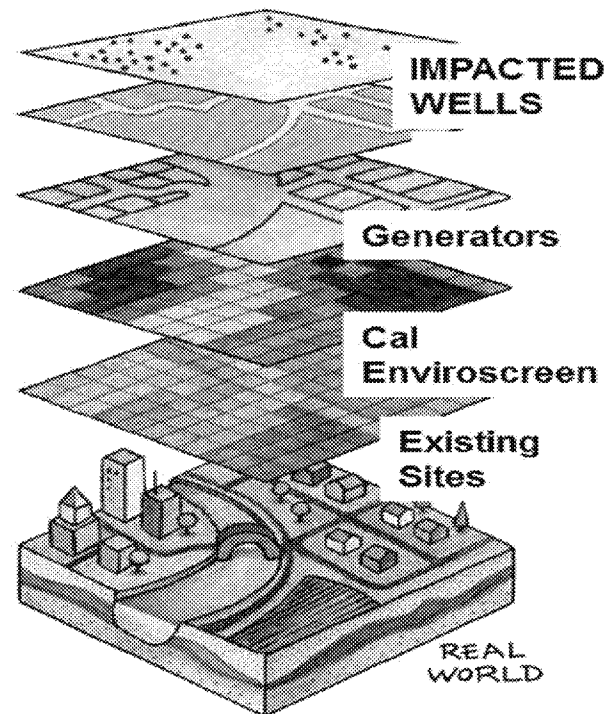
Enhanced Remedy Selection Process Improvements: Next Steps

- **Select three additional pilot sites in 2017**
 - Apply enhanced remedy selection process consistent with above identified streamlining principles
 - Track critical milestones for selected pilot sites
- **Provide training to project managers/staff**

Site Mitigation Program Improvements

**Rick Fears, Senior Engineering Geologist,
Geological Services Branch**

Spatial Prioritization Geographic Information Tool (SPGIT)

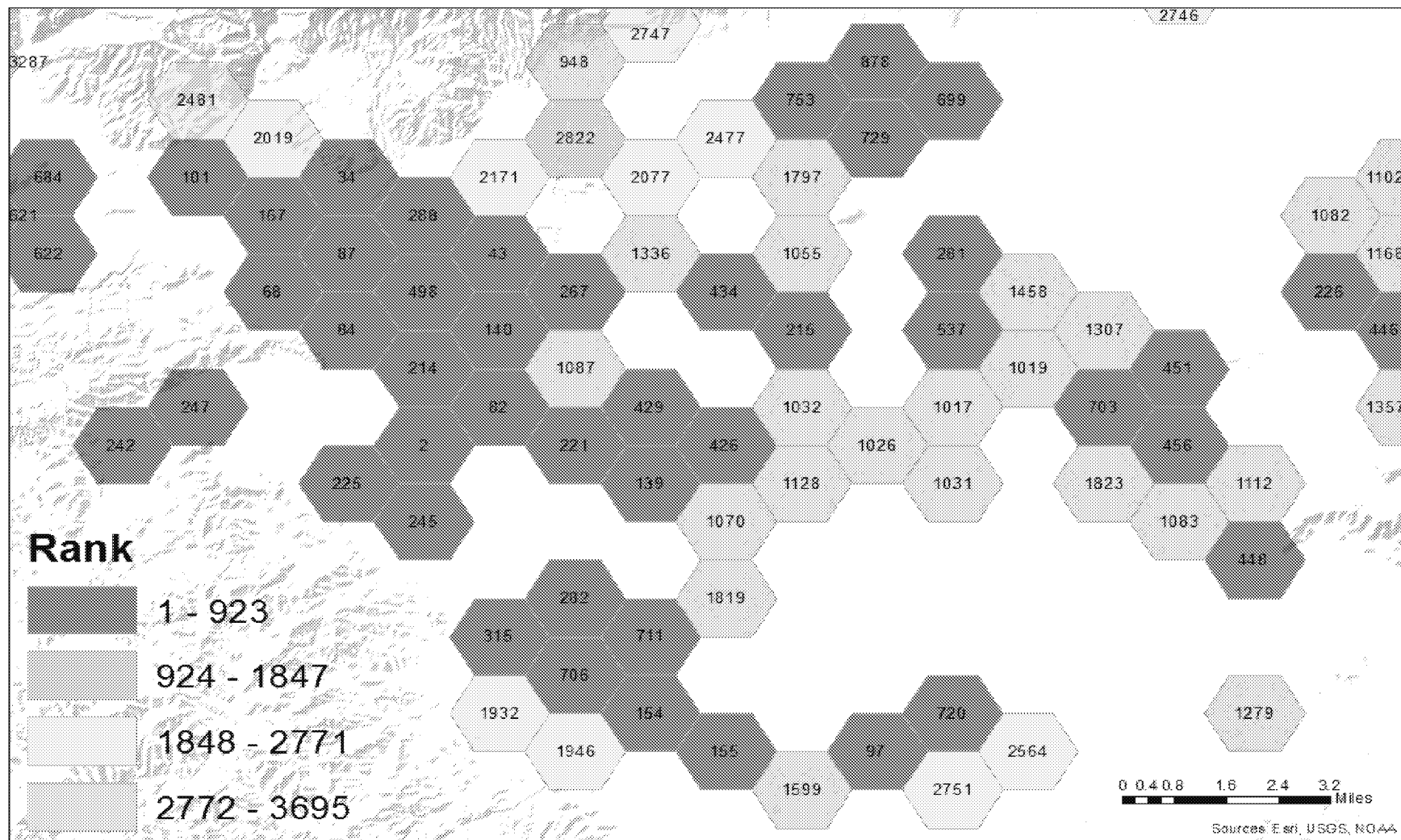


Spatial Prioritization Geographic Information Tool Factors

Factor	Weight
A. Health Risk – Contaminated Drinking Water Well Count	8
B. Potential Risk – Generator Density	3
C. Environmental Justice – Cal EnviroScreen	2
D. Environmental Work Completed	1



SPGIT 2.0 Los Angeles Area



Future Improvements

- **Voluntary Cleanup Program**
 - Streamline decision-making process
 - Reduce time for DTSC's review of workplans and reports
- **Proposed Toxicity Criteria Rulemaking**
 - Develop regulation establishing uniform, more predictable process to select toxicity criteria for risk-based remediation
 - Prioritize established and peer-reviewed sources of risk-based criteria to develop protective cleanup levels
 - DTSC held informational workshop on the pre-rulemaking draft regulation and provided opportunity for public input

PCB Sample Analysis

Investigation of Why Different Labs Reported Different Results

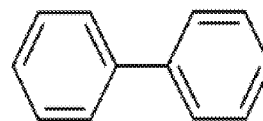
**Presented by Bruce La Belle, Ph. D.
DTSC Environmental Chemistry Laboratory**

What We Will Cover

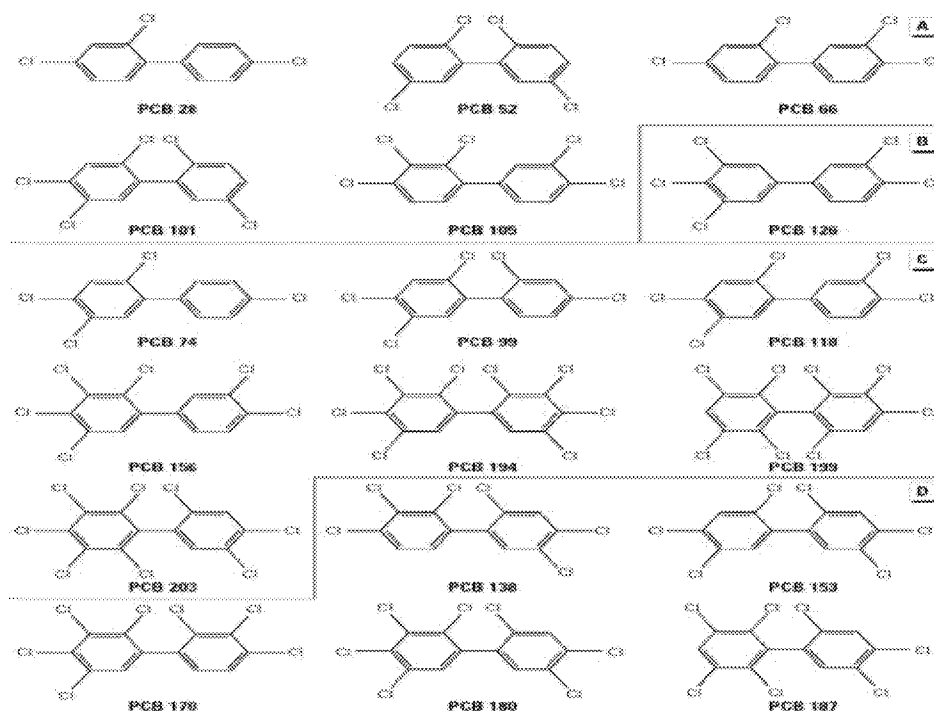
- What are PCBs and “Aroclors” – mixtures of closely-related chemicals (“congeners”)
- EPA Method 8082 for reporting PCBs as Aroclors - has inherent variability
- Labs used different methods to extract the PCBs from the soil samples – can affect results
- Aroclor mixtures “weather” over time in the environment – needs to be considered
- Labs use different PCB congeners to determine the amount of Aroclors present – can affect results

What are PCBs and Aroclors?

- PCB = “Polychlorinated biphenyl”
- 1-10 chlorines on “biphenyl” rings
- 209 “congeners” with different numbers and locations of chlorines
- Sold as mixtures of congeners called “Aroclors” 1248, 1254, 1260, etc.
- Excellent properties: oily liquids, heat stable, electrical resistor, fire resistant
- Electrical transformers, fluorescent light ballasts, plasticizer in caulk, fire-resistant coatings
- Fire-resistant high-pressure hydraulic fluids



Biphenyl



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Background

- DTSC sent soil samples from Ag Park to a commercial lab (A) for PCB analysis by EPA Method 8082 (reported as Aroclors).
- EPA Region 9's Lab analyzed soil samples collected at adjacent locations. EPA sent split samples to a different commercial lab (B) for testing, as well
- Results from Lab A appeared to be 2-3 times lower than the results from EPA.
- ECL was asked to investigate the reasons for the differences

The Issue: Lab A Results Were Lower Than Those From EPA's Lab

Collection Date	EPA Results		Lab A Results		Diff	RPD
	9/1/2015	9/1/2015	9/1/2015	9/1/2015		
Collector ID	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)		
RivAg-F8-Surf	0.46	0.17	0.29	92		
RivAg-G8-Surf	0.34	0.099	0.241	110		
RivAg-F7-Surf	0.16	0.057	0.103	95		
RivAg-D7-Surf	0.034	0.011	0.023	102		
RivAg-B7-Surf	0.056	0.021	0.035	91		
RivAg-C6-Surf	0.14	0.062	0.078	77		
RivAg-E6-Surf	0.84	0.42	0.42	67		
RivAg-G6-Surf	0.11	0.043	0.067	88		
RivAg-F5-Surf	0.42	0.12	0.3	111		
RivAg-D5-Surf	0.41	0.13	0.28	104		
RivAg-C5-Surf	0.95	0.29	0.66	106		
RivAg-C55-Surf	1.2	0.35	0.85	110		
RivAg-D4-Surf	1.9	0.8	1.1	81		
RivAg-F3-Surf	3.7	1.8	1.9	69		
RivAg-D3-Surf	0.29	0.13	0.16	76		
RivAg-C2-Surf	0.12	0.066	0.054	58		



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What ECL Did

- Reviewed “Level 4 data packages” from Lab A and EPA Lab
- Discussed with Lab A and EPA lab personnel
- Conducted experiments to compare Soxhlet and sonication soil extraction methods
- Reviewed a spreadsheet EPA provided that listed split sample results from their lab and those from a different commercial lab (Lab B)

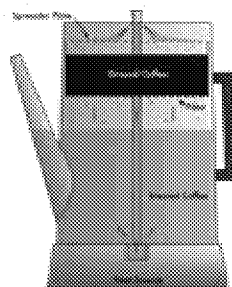
Steps to Analyzing a Sample

1. Receive soil sample
2. Extract small portion “aliquot” of the sample: Method 8082 references several other EPA methods for extracting the sample, including “Soxhlet” (Method 3540), and Sonication (Method 3550). The “extract” is cleaned-up to remove impurities and prevent instrument contamination
3. EPA Method 8082: analyze the sample extract on a “Gas Chromatograph” instrument
4. Identify what PCB Aroclors are present
5. Calculate amount of each Aroclor present in the sample

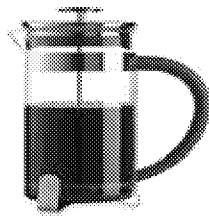
Extraction Method Can Make a Difference But Within Tolerances of the Method

Example: Your Cup of Coffee

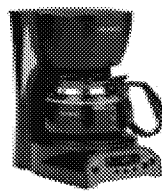
- Same beans
- Different extraction
- Some variability in taste, but within tolerances of coffee



Percolator



Presse

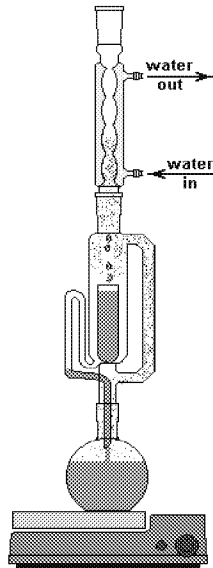


Drip

EPA Method 8082 References Various Methods for Soil Extraction

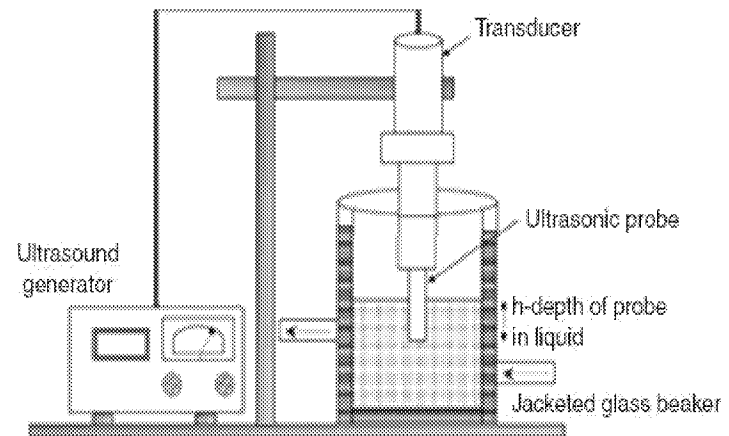
Soxhlet extraction (EPA Method 3040):

Reflux for 16-24 hours so solvent continuously drips through soil in porous thimble (filter)

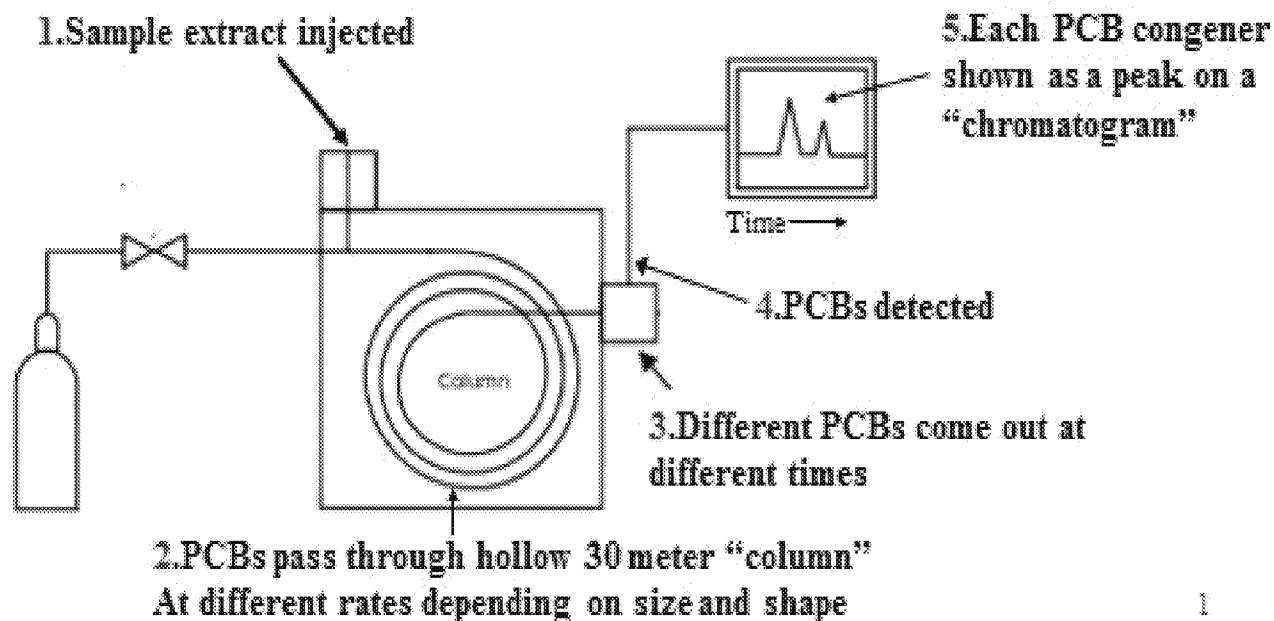


• Sonication (EPA Method 3550):

- Sonicate three times for three minutes each with ultrasonic probe



EPA Method 8082: PCBs by Gas Chromatography



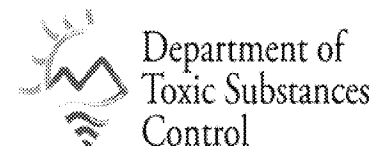
Gas Chromatograph

EPA Method 8082:

PCBs by Gas Chromatography (continued)

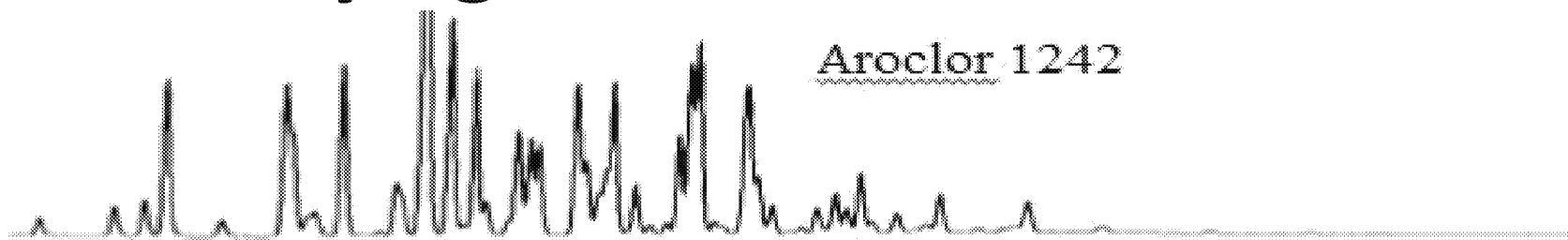
- As each PCB congener comes out of the GC over time, it is detected as a “peak”
 - Each Aroclor has a unique pattern of peaks and their relative comparative sizes
 - The size (area) of a peak relates to how much of the PCB congener is present
 - The sum of the areas of all the peaks is the amount of the Aroclor present
- First, the analyst identifies which Aroclor(s) are present
 - Aroclor 1248 was identified in samples from site
- Then, the analyst determines how much of that Aroclor is present

Aroclor 1248
Analytical Standard

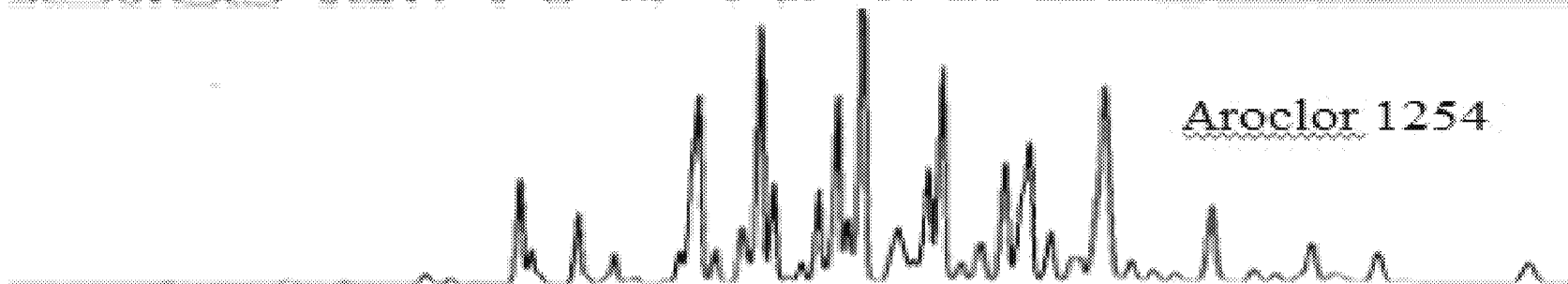


Identifying Which Aroclor is Present

Aroclor 1242

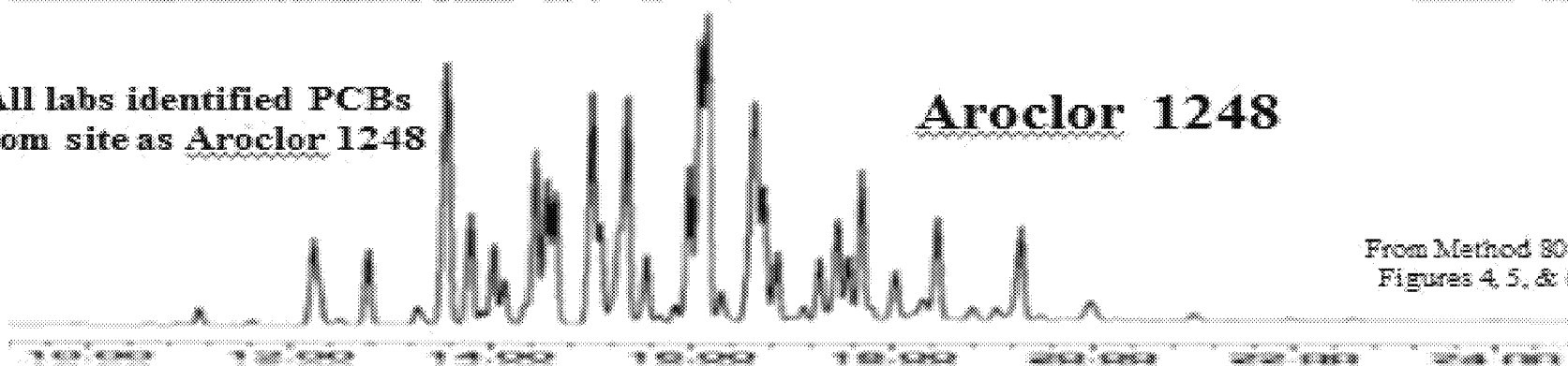


Aroclor 1254



**All labs identified PCBs
from site as Aroclor 1248**

Aroclor 1248

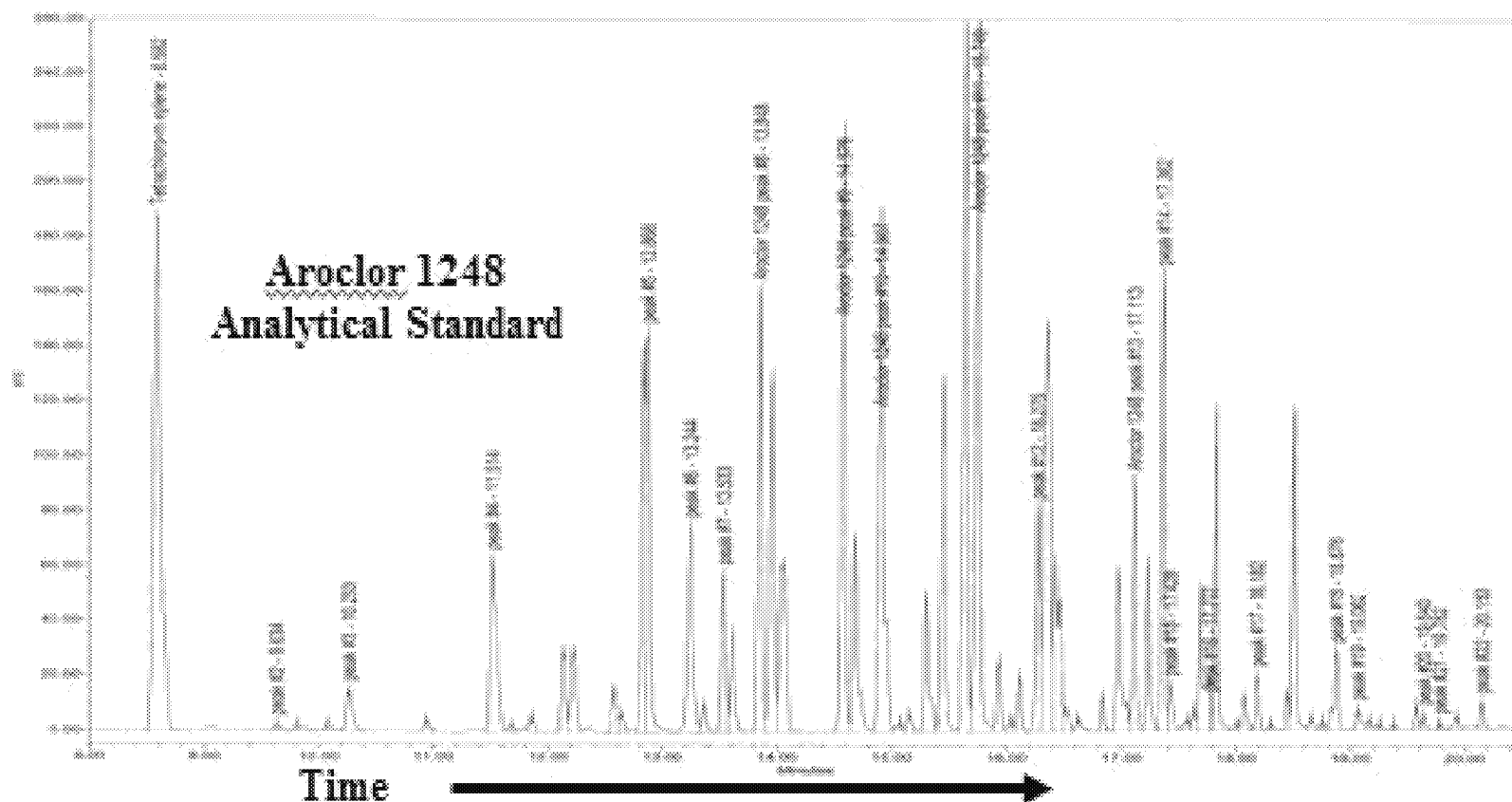


From Method 8082
Figures 4, 5, & 6

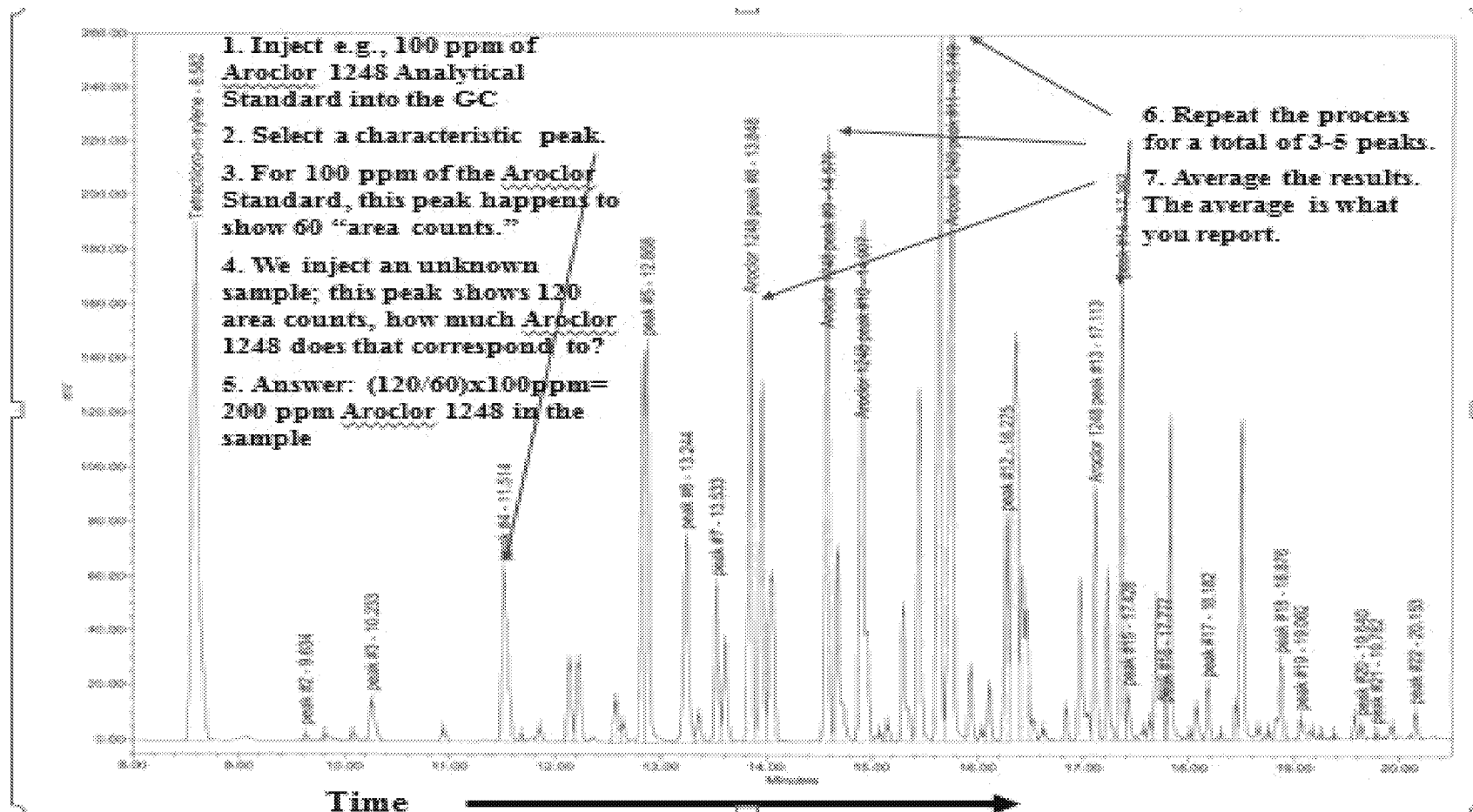
Aroclor Quantitation

- Area under all the peaks relates to the amount of Aroclor present.
- Potentially >100 overlapping peaks, so difficult to actually measure them all
- Inject a known amount (e.g., 100 ppm) of the Aroclor 1248 Analytical Standard
- Measure “area counts” of a characteristic peak in the chromatogram
- Relate “area counts” of that peak to the amount of Aroclor injected.
- Repeat for 3-5 peaks and average the results

Aroclor Quantitation (continued)



Aroclor Quantitation



Aroclor Quantitation (continued)

- Method 8082 has significant inter-laboratory variability even when all use spiked soil samples and Soxhlet extraction
- Study published in Method 8082 itself. Multiple-lab precision & accuracy data from Soxhlet extraction of spiked soil. Soil samples spiked with 5, 50, or 500 ppb Aroclor 1254 or 1260 sent to eight labs. Labs tested each sample 3-6 times.
- For Aroclor 1254 (closest to 1248), average percent recovery for individual labs ranged from 38.3% to 144.3%

Level 4 Data Package: All the Raw Data and Calculations Such That a Reviewer Can Re-Create the Results

- Labs used quality assurance/quality control samples to confirm that they can adequately extract the PCBs and detect them (LCS spikes, Matrix spikes, surrogate spikes, etc.)
- Method 8082 allows for options in the specific procedures that a lab may follow:
 - Lab A (the lab used by DTSC) used sonication and the EPA Lab used Soxhlet to extract the PCBs from the soil
 - The labs used different peaks to calculate the concentration of PCBs in the samples

Inter-laboratory Variability for Samples from Ag Park

- EPA Region 9 sent split samples from Ag Park to a different commercial lab (Lab B)
- EPA and Lab B each used Soxhlet extraction
- Results from the two labs often varied by $\pm 50\%$, and sometimes by a factor of 2
- The variability between labs appears to be random

Inter-laboratory Variability for Samples from Ag Park (continued)

Sample ID	Commercial Lab Total PCBs (Total PCB) Samples	EPA Total PCBs (mg/kg) Samples	Diff	Mean	RPD	RPD %
CS-1555	0.369	0.814	0.445	0.5915	-0.75232	-75
CS-1557	0.288	0.525	0.237	0.4065	-0.58303	-58
CS-1002	0.404	0.562	0.158	0.483	-0.32712	-33
F/GT 3-1505	0.319	0.2	0.119	0.2595	0.458574	46
FS-1503	0.180	0.195	0.015	0.1875	-0.08	-8
GT-1510	0.315	0.596	0.281	0.4555	-0.6169	-62
G-4-S-1525	0.32	0.181	0.139	0.2505	0.55489	55
G-4-S-1537	0.078	0.04	0.038	0.059	0.644068	64
W-1-1002	1.51	1.143	0.367	1.3265	0.276668	28
W-2-1002	1.30	1.566	0.266	1.433	-0.16562	-19
GS 3-1700	0.289	0.304	0.015	0.2965	-0.05059	-5
GS 3-1535	8.36	6.3	2.060	7.33	0.281037	28
GS 3-1532	0.28	0.447	0.167	0.3635	-0.45942	-46
F/GT-1509	0.199	0.223	0.024	0.211	-0.11374	-11
G-4-4-1520	ND-ND.D095	0.028				
G-4-2-1702	ND-ND.D095	0.025				

ECL Did Study Comparing Soxhlet to Sonication Using Samples from the Site

- ECL extracted aliquots of six samples from the site using Soxhlet and sonication
- ECL analyzed the extracts side-by-side to eliminate effects of instrument variability
- Sonication gave slightly lower results, but within Method tolerances

ECL Did Study Comparing Soxhlet to Sonication Using Samples from the Site (continued)

Ag Park Samples - Soxhlet Compared to Sonication - Analyzed on the Same Day

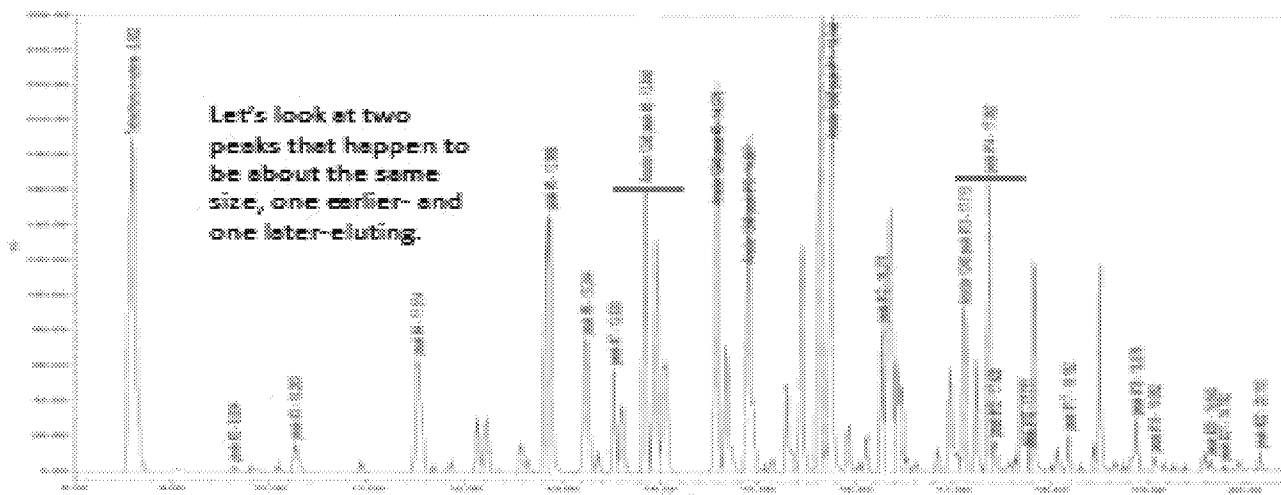
		Soxhlet Extraction 30/30 DCM/Acetone		Sonication 1/4" tip 30/30 DCM/Acetone			
Run Date		2/26-27/2016		2/26-27/2016			
Extraction Date		11/9 -11/2015		1/15/16			
Prep Batch Codes		Original		94 R3 Q7		Diff	RPD
Collector ID	ECL ID	Dil.	Conc (mg/kg)	Dil.	Conc (mg/kg)	Conc (mg/kg)	%
RIVAG-B4N20-S	AZ01327	50	34.1	50	33.7	0.4	1
RIVAG-B4E10-S	AZ01330	100	95.6	100	81.2	14.4	20
RIVAG-B4W10-S	AZ01332	10	10.4	10	10.8	-0.4	-4
RIVAG-F3S10-S	AZ01338	5	6.11	5	4.75	1.36	25
RIVAG-F3E20-S	AZ01341	1	0.89	1	0.491	0.399	57
RIVAG-F3W10-S	AZ01342	5	2.89	5	2.52	0.36	13

Weathering of Aroclors in the Environment

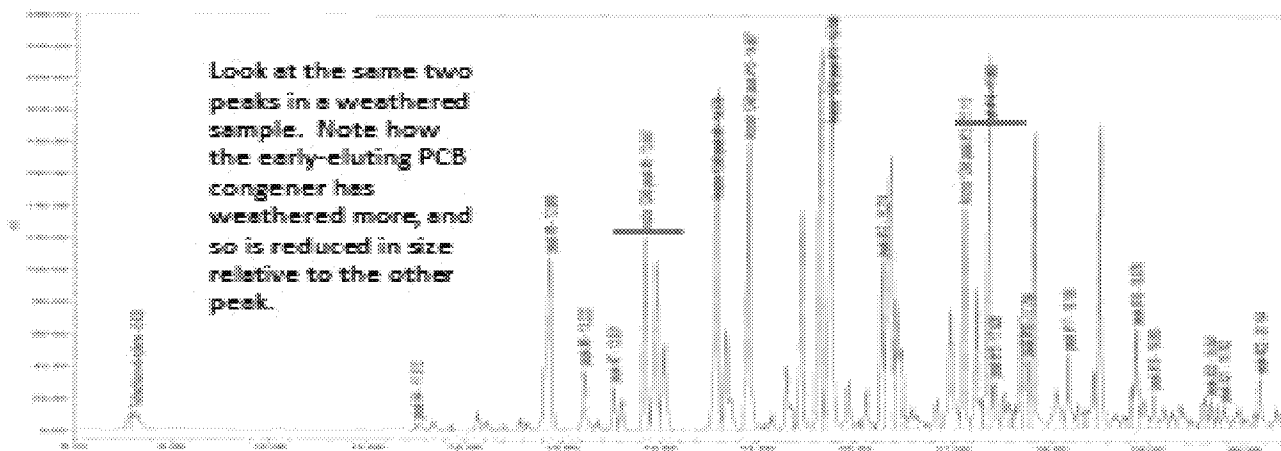
- PCB Aroclors “weather” over time in the environment
- Lighter, less chlorinated PCB congeners tend to be lost more quickly by evaporation, degradation, etc.
- As a PCB Aroclor weathers, the peak pattern changes
- Early-eluting peaks (left side of chromatogram) tend to be reduced in size relative to late-eluting peaks

Comparison of Fresh and Weathered Aroclor 1248

**Aroclor 1248
Analytical Standard**

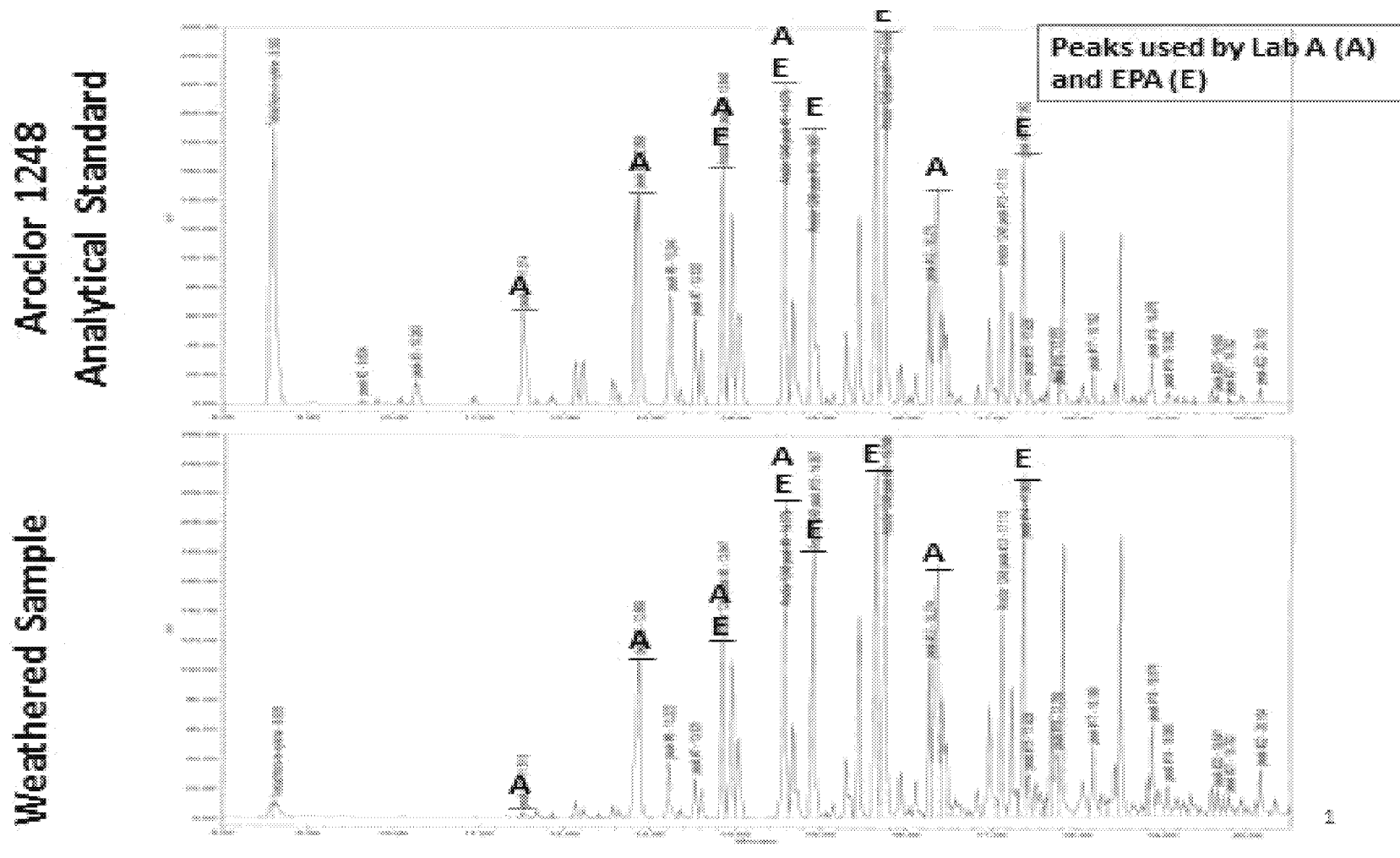


Weathered Sample



Department of
Toxic Substances
Control

Lab A Tended to Use Earlier-Eluting Characteristic Peaks



Conclusions

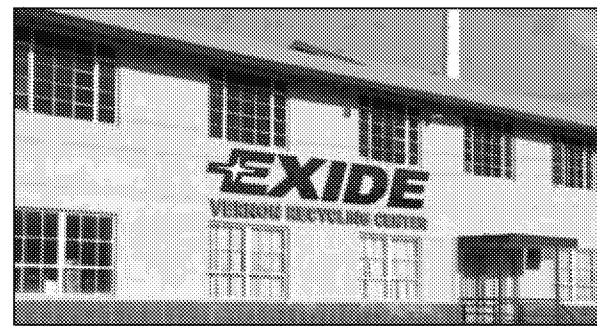
- When reporting PCBs as Aroclors using EPA Method 8082, there is variability within and between labs
- PCB Aroclor results by Method 8082 can be affected by:
 - Inherent variability of the method
 - Extraction method
 - Choice of peaks for weathered samples
 - Sample heterogeneity
- Both labs followed the Method. Key factor in differences between Lab A and EPA lab was choice of peaks for weathered samples

Exide Update - Facility Background

Exide Technologies was one of only two Lead Acid Battery Recycling Plants West of the Rockies.

Exide was a class 2 lead smelter in Vernon, CA.

- 1922 - The original facility began operations
- 2000 - The facility was acquired by Exide
- March 2014 - Exide temporarily stopped operations
- February 2015 - DTSC informed Exide that it would not approve the Resource Conservation and Recovery Act permit for the facility
- March 2015 - DTSC issued an order to close the facility
- Currently - Undergoing closure process



Exide Update

Facility Closure

- Final Closure Plan
- Final Environmental Impact Report

Residential Cleanup

- Draft Residential Cleanup (Remedial Action) Plan
- Draft Environmental Impact Report

Exide Update

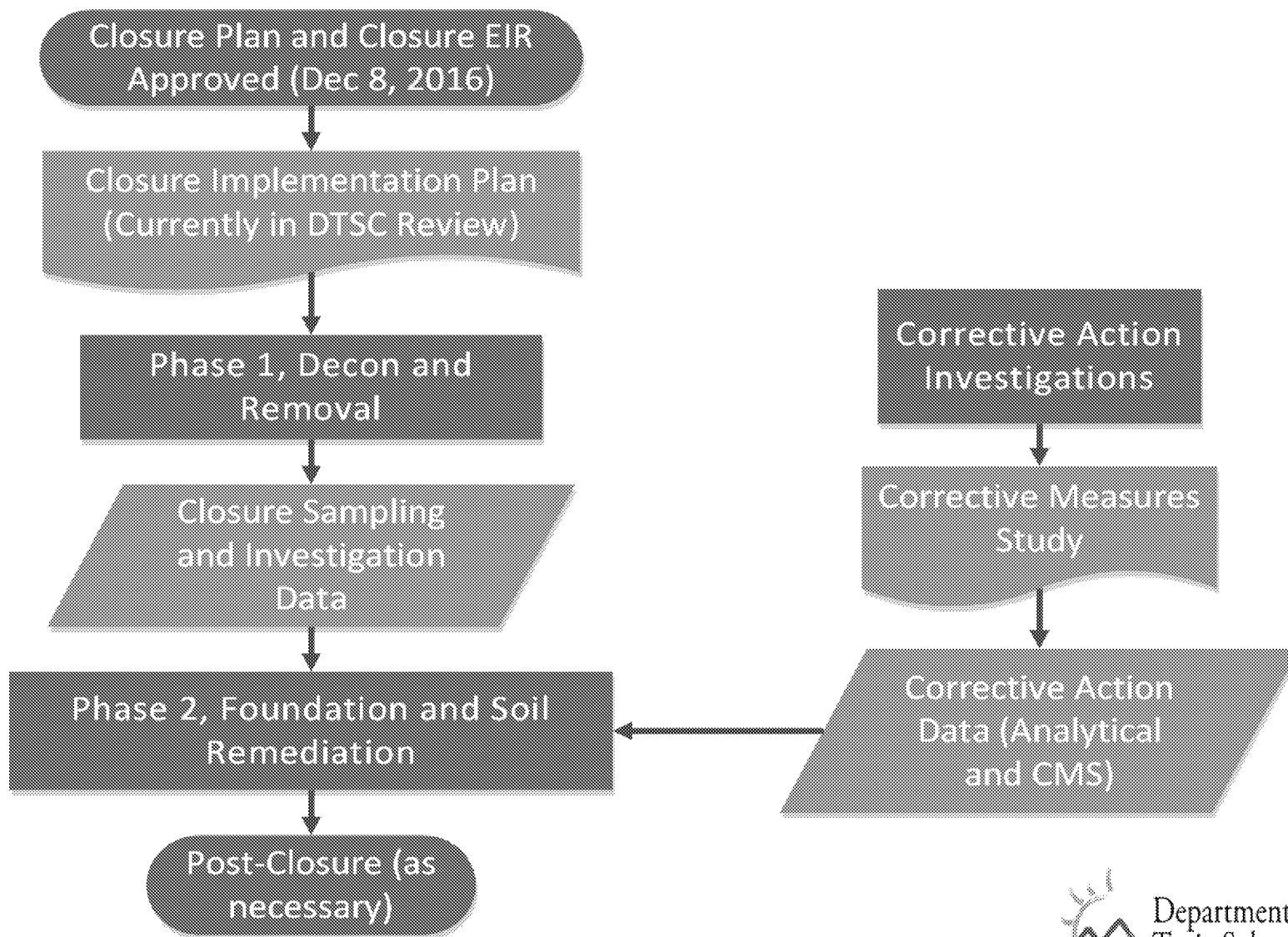
Exide Closure and On-Site Corrective Action

**– Suhasini Patel, Branch Chief, Exide
Corrective Action/Data Management**

Exide Residential Corrective Action

**– Tamara Zielinski, Branch Chief, Exide
Off-site/Residential Corrective Action**

Closure and Corrective Action Processes



DTSC's Commitment

Ensure Closure Implementation will:

- Safeguard community and environment
- Continue to engage the community
- Maintain financial assurance

Air Monitoring Plan:

- On-site Worker Health and Safety
- Off-site Resident Protection

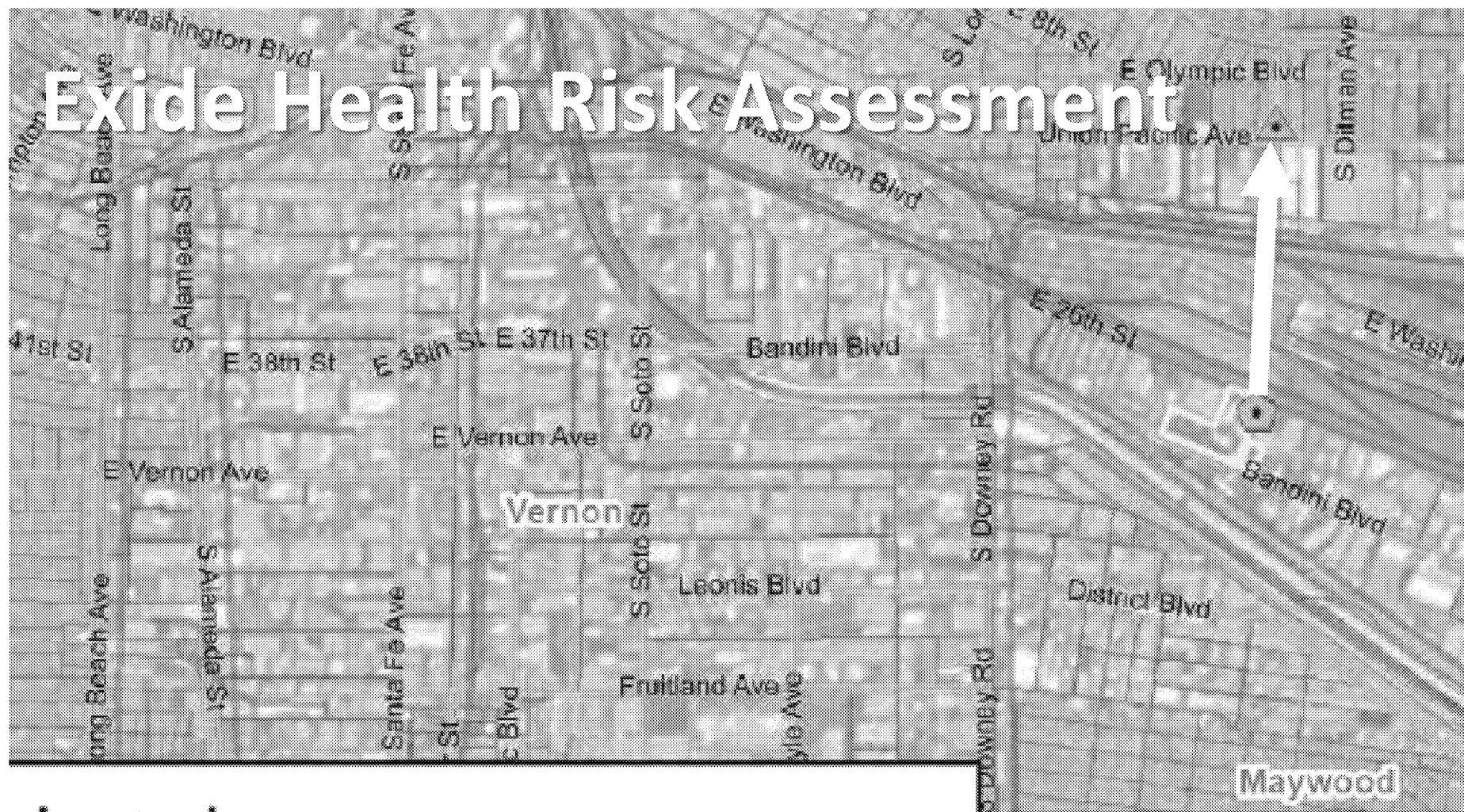
Fugitive Dust Emissions

- **Compliance Plan for Closure Activities - Reviewed by both DTSC and Local Air District (South Coast Air Quality Management District)**
 - Tent the Enclosure Building and conduct work under negative pressure
 - Maintain air pollution control equipment
 - Ambient air monitoring for metals and dust




Residential Cleanup Timeline

- **2013** Sampling
 - Exide Heath Risk Assessment
 - Initial Assessment Areas
- **2014** Sampling and Cleanup
 - Expanded Area North and South
 - Cleanup
- **2015** Sampling and Cleanup
 - Preliminary Investigation Area
- **2016/2017**
 - Remedial Action Plan and California Environmental Quality Act

Exide Health Risk Assessment



Legend

-  Maximum Exposed Individual Resident (MEIR)
-  Maximum Exposed Individual Worker (MEIW)
-  Property Boundary

Notes:

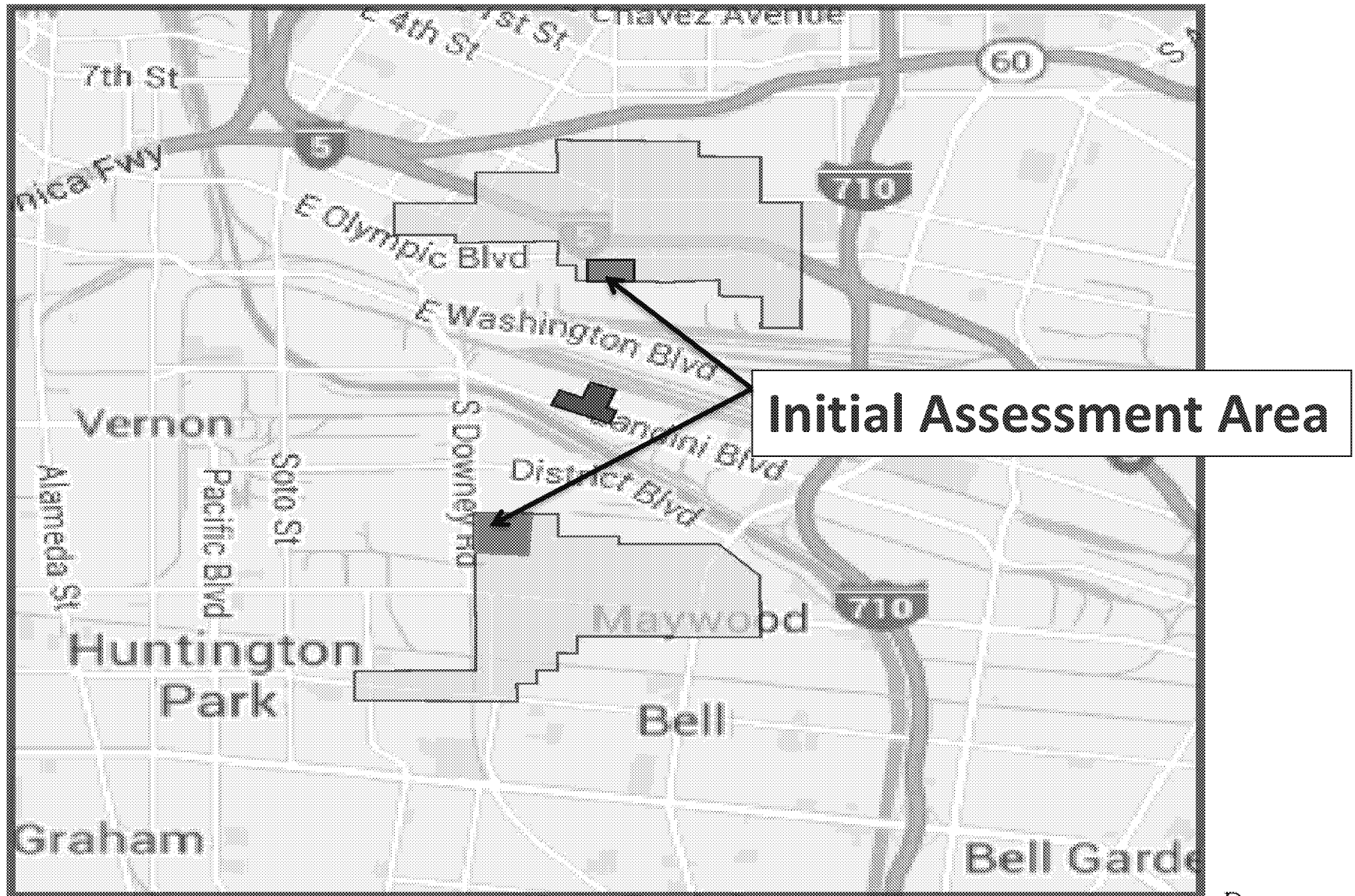
1. Aerial Imagery Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, UPR-EGP, and the GIS User Community
2. Point of Maximum Impact (PMI) at same location as MEIW

Residential Sampling and Cleanup

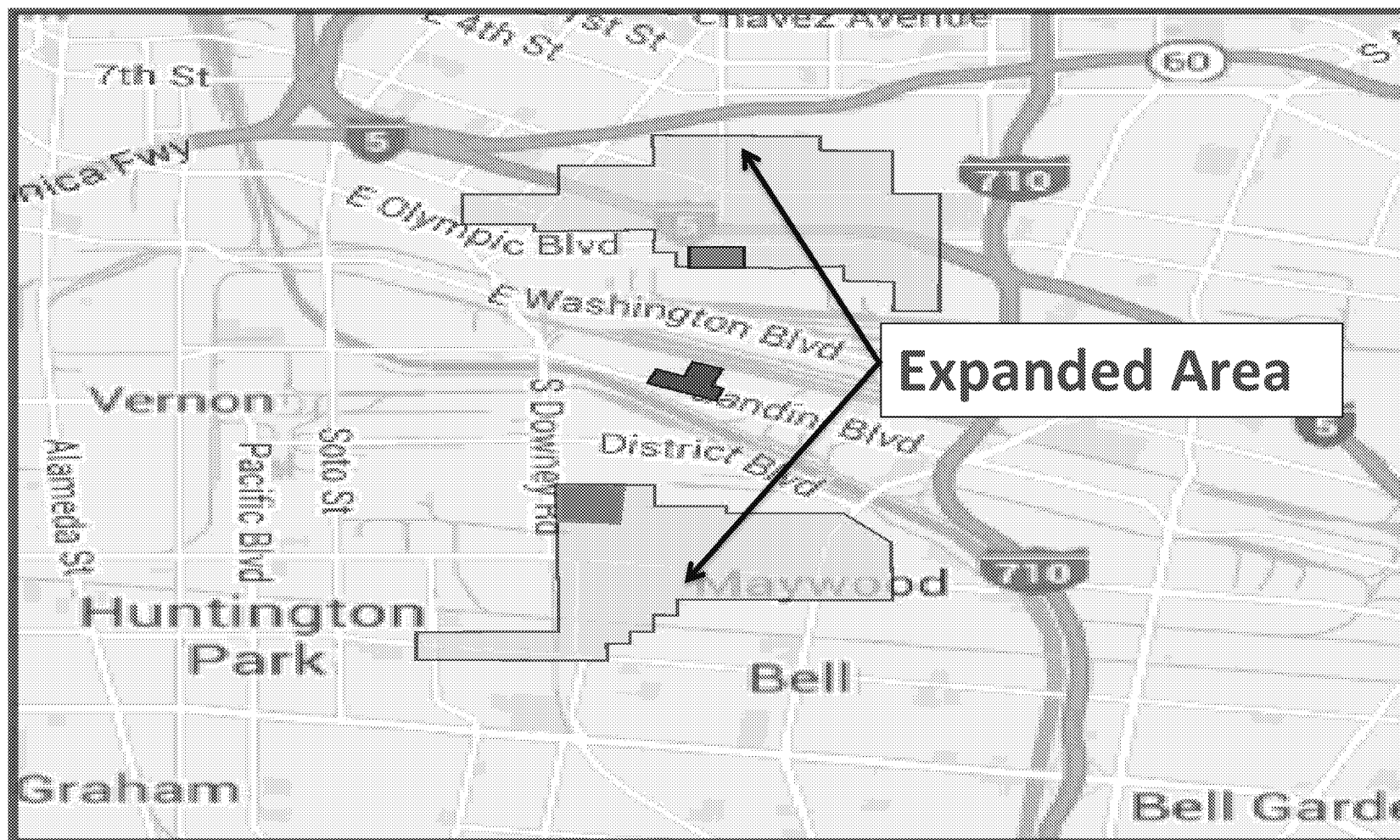
In 2014, DTSC ordered Exide to sample and cleanup contaminated properties in two residential neighborhoods (Initial Assessment Area) and Expanded Area near the facility

- 186 homes in the affected area sampled and cleaned up
- Additional Sampling was conducted in the Expanded Area to the North and South of the facility
- Time period: 2014/2015

Initial Assessment Area



Expanded Area



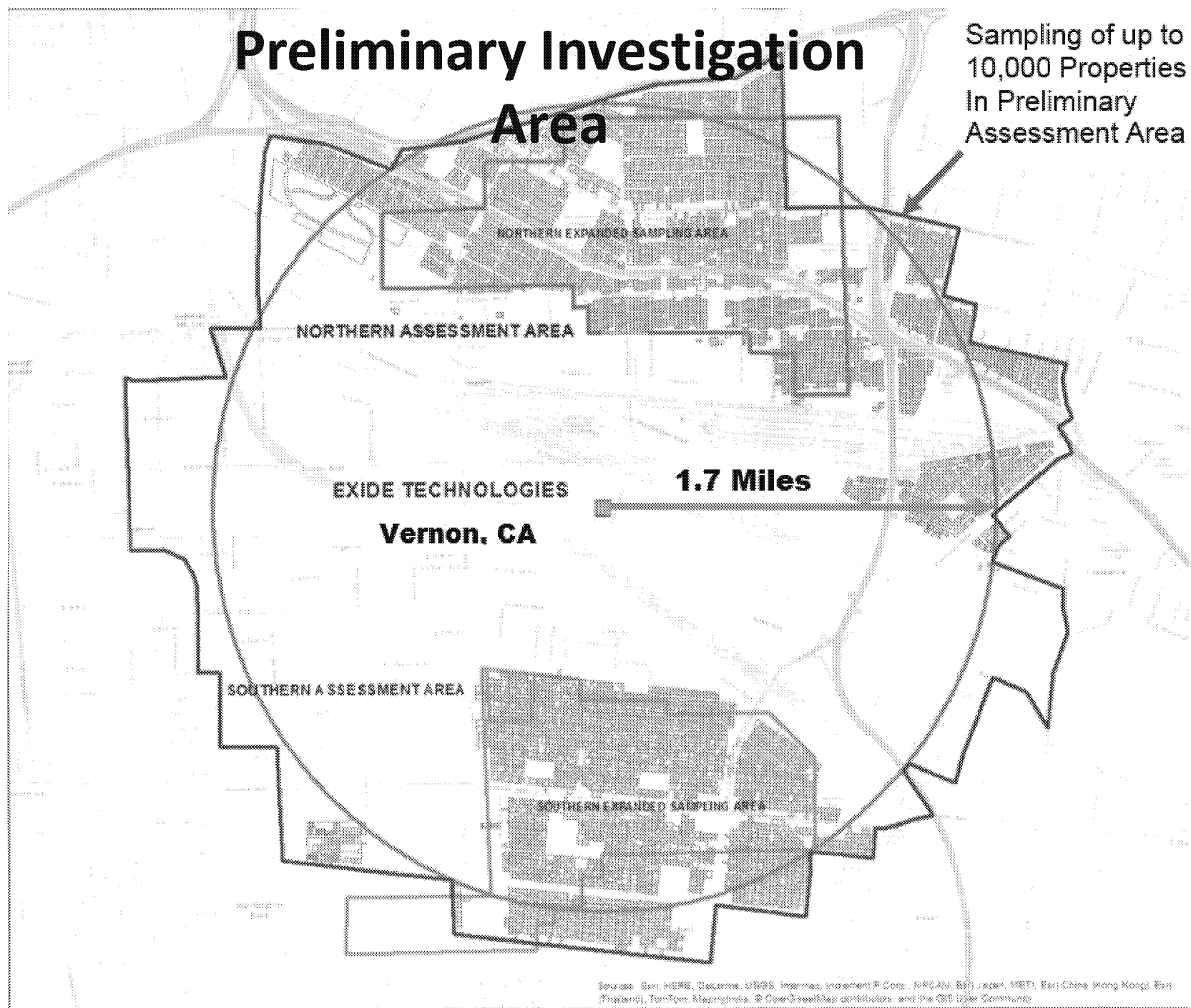
Residential Sampling and Cleanup Funding

In 2015, the Governor approved \$7 million:

- DTSC sampled 1,500 homes in the affected area
- DTSC cleaned 50 homes in the affected area
- Time period: July 2015 - June 2016

Preliminary Investigation Area

Sampling of up to
10,000 Properties
In Preliminary
Assessment Area



Source: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Swis (Taiwan), TomTom, Mapbox, © OpenStreetMap contributors, and the GIS User Community

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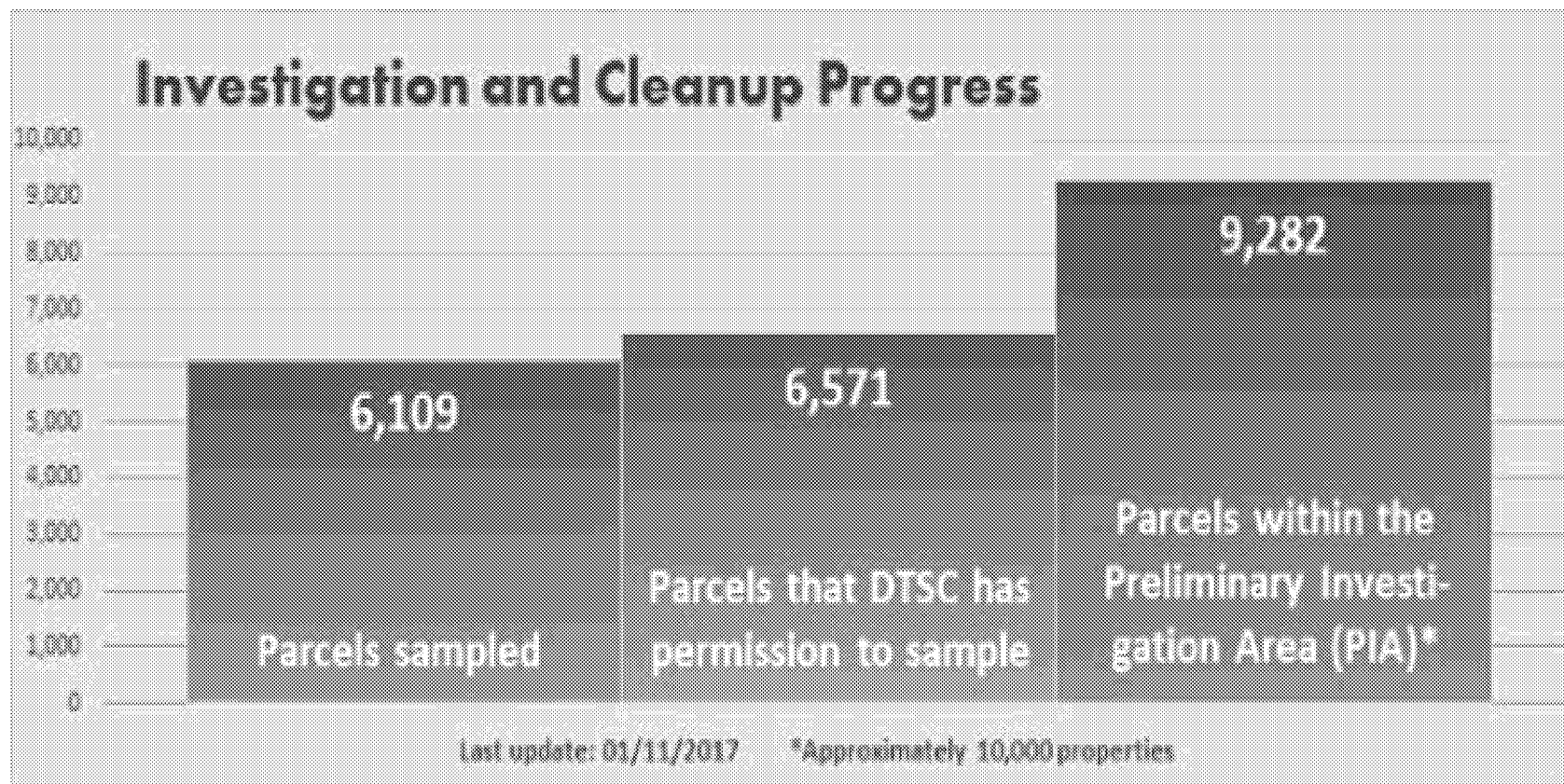
Residential Sampling and Cleanup

In April 2016, the Governor signed legislation for a \$176.6 million loan:

- DTSC continue to test homes in the affected area (test approximately 10,000 properties)
- DTSC clean 2,500 properties in the affected area

DTSC also prepared a Draft Remedial Action/Cleanup Plan and a Draft Environmental Impact Report for the Cleanup Project

Current Sampling Status

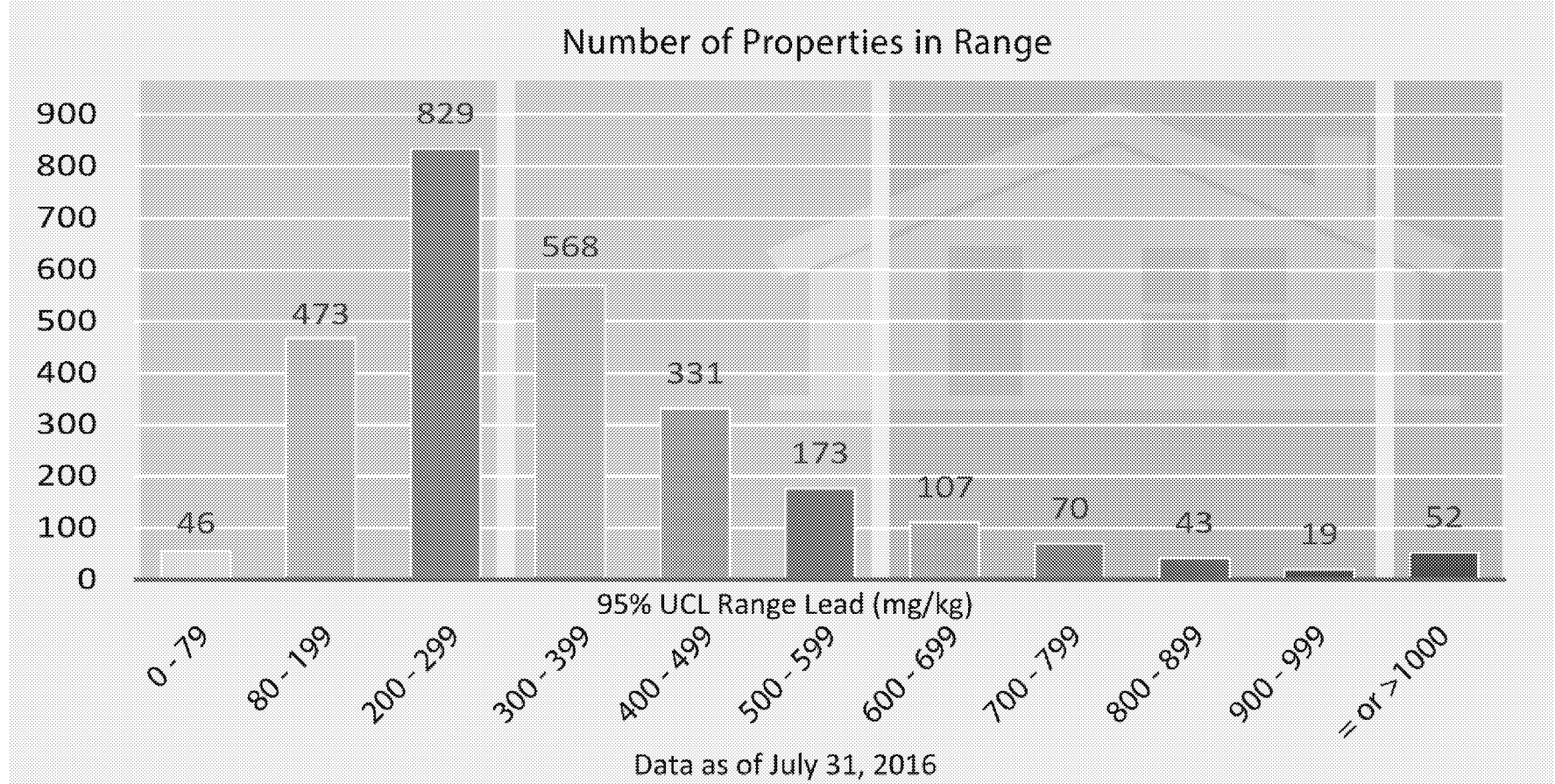


236 Properties Cleaned Up To-Date

Soil Sampling Results

Preliminary Investigation Area (PIA)

Lead Soil Concentrations at 2,711 Properties



Remedial Action/Cleanup Plan

Environmental Impact Report Timeline

- Draft Remedial Action Plan (DRAP) & Draft Environmental Report (DEIR) released December 15, 2016
- Public Comment Period on DRAP/DEIR:
December 15, 2016 through February 15, 2017
- DTSC will evaluate all comments, prepare response to comments and prepare Final Cleanup Plan and Environmental Impact Report
- DTSC to Finalize Cleanup Plan and certify Final Environmental Impact Report: June 2017



Workforce for Environmental Restoration in Communities

Partners



#WERC

www.dtsc.ca.gov/WERC

- Train and promote hiring of residents in communities near the former Exide Technologies Facility
 - Environmental Skills
 - Health & Safety Training
 - Job Readiness

